#### 1. Question 1 – BPM - 2 Marks

Identify Business Process Model for Online Agriculture Store – (Goal, Inputs, Resources, Outputs, Activities, Value created to the end Customer)

#### **Business Process Model**

A Business Process Model (BPM) is a visual representation of a business process, illustrating the sequence of activities, decisions, inputs, and outputs to help stakeholders understand, analyze, and improve workflows.

- Goal Create an online store for agriculture products
- Inputs Requirements, money, ideas, time, labour
- **Resource** Employees, tools,team,computer,network,
- **Output** Product, experience, knowledge, project closure document,

**Activity** - Requirement gatherings and analyze,documenting,planning,designing, meeting,developing,testing,verifying, validating,working

Value created to the end customer - Expected final product The online store for agriculture

Question 2 - SWOT - 2 Marks

Mr Karthik is doing SWOT analysis before he accepts this project. What Aspects he should consider as Strengths, as Weaknesses, as Opportunity and as Threats.

### **SWOT Analysis**

A SWOT analysis is a strategic planning tool used to assess the Strengths, Weaknesses, Opportunities, and Threats of a business, project, or initiative. It helps in identifying internal and external factors that can impact success.

| STRENGTH             | WEAK               | OPPORTUNITY                     | THREAT               |
|----------------------|--------------------|---------------------------------|----------------------|
| Technical experts    | Limited resources  | Working in new                  | Network issues       |
|                      | and time           | field                           |                      |
| Hardworking          |                    |                                 | Some companies       |
| resources            | Location           | Lack of competitor              | may not agree to     |
|                      |                    |                                 | work in this project |
| Communication        | Small size company | Chance to get new               |                      |
|                      |                    | experience                      | Chances to get new   |
| Strong planning      | Lack of finance    |                                 | rival                |
|                      | team               | New technology                  |                      |
| Up to date Skill Set |                    |                                 | Reaching nook and    |
| in resources         | Limited marketing  | Work with new                   | corners of country   |
|                      | opportunities      | company                         |                      |
| Well trained team    |                    |                                 | Lack of awareness    |
|                      |                    | New relationship with companies |                      |

| Cost-effective      | Weak sales team                       | Economical     |
|---------------------|---------------------------------------|----------------|
| Co-operative        | Lack of knowledge                     | fluctuations   |
| candidates          | in agriculture field                  | Social Issues  |
| Successful projects | Lack of relationship with agriculture | Weather issues |
| Good feedback       | companies                             |                |
|                     | Lack of awards                        |                |
| Experience          |                                       |                |
|                     |                                       |                |

Question 3 - Feasibility study - 1 Marks

Mr Karthik is trying to do feasibility study on doing this project in Technology (Java), Please help him with points (HW SW Trained Resources Budget Time frame) to consider in feasibility Study.

## **Feasibility Study**

A Feasibility Study is an analysis that evaluates the viability of a business idea, project, or initiative before significant investments are made. It helps determine whether the project is technically, financially, legally, and operationally feasible.

HW and SW trained resources needed for this project

| JOB          | RESOURCE   |
|--------------|--|
| Plan         | Business Analyst - 1                                       |
| Design       | PM - 1,Senior Developer - 1                                |
| Developement | Developers - 4,DB admin - 1,NW admin -<br>1                |
| Test         | Tester - 2   |
| UAT          | Developers,DB admin,NW admin Tester<br>Business Analyst PM |

18 months needed to complete this project

| JOB     | DAYS     |
|---------|----------|
| Plan    | 30 Days  |
| Design  | 60 Days  |
| Develop | 300 Days |
| Test    | 135 Days |
| UAT     | 14 Days  |

Alloted Budget for this project is 2 crores

| Salary                 | 500000  |
|------------------------|---------|
| Security               | 3000000 |
| Licence                | 2000000 |
| Company Infrastructure | 500000  |
| Tools                  | 2000000 |
| Network                | 2000000 |
| Audit                  | 1000000 |

Question 4 – Gap Analysis - 1 Marks

Mr Karthik must submit Gap Analysis to Mr Henry to convince to initiate this project. What points (compare AS-IS existing process with TO-BE future Process) to showcase in the GAP Analysis.

#### **Gap Analysis**

Gap analysis is a strategic tool used to compare actual performance with expected or desired performance. It helps identify gaps between the current state and the target state, allowing organizations to develop action plans to bridge those gaps.

| AS-IS  | ТО-ВЕ   |
|--|---|
| Farmer buy products from stores                                      | Farmer buy product from online                      |
| Farmer could not get desired products                                | Farmer can get desired products in online           |
| Farmer needs to do payment in person                                 | Farmer can do all mode of payments                  |
| Farmer needs to go to shops to buy product                           | Farmer can buy products at home                     |
| Farmer carries products to home                                      | Farmer gets products delivered to home              |
| Farmer has limited option for products                               | Farmer has various option for single product        |
| Farmers need to rely on shop owners to know the product review       | Farmer can read and write review in the application |
| Farmer can not compare products                                      | Farmer can compare products in application          |
| Farmer needs to spend time for buying a product                      | Farmer can buy products in a single touch           |
| Farmer need to check in the shop to know the availability of product | Farmer can check product availability in online     |
| Farmer can only buy products in week days only                       | Farmer can buy throughout a year                    |
| Farmer buying product is a long process                              | Farmer buy product is made easy and quick           |
|  |   |

Question 5 – Risk Analysis - 3 Marks

List down different risk factors that may be involved (BA Risks And process/Project Risks)

### **Risk Analysis**

Risk analysis is the process of identifying, assessing, and prioritizing risks that could impact a project, business, or system. It helps in developing strategies to mitigate potential threats and capitalize on opportunities.

#### **Business analyst risk**

Requirement gathering: Improper requirements will lead to project failure

Communication with stakeholders - Bad communication between the stakeholder and BA will lead to misunderstanding and slow down the project process

Risk analysis - Improper will give future risk to project

Scope creep - Having change request will change the schedule and budget of the project

Stakeholders management - Not Managing and maintain stakeholders expectation and misunderstanding will impact the project process

#### **Project risk**

Resource - Having constraints in tools, system, employee will affect the project

Budget - Low budget will give low quality application

Technical issue - Having technical problems like network and DB down,code or firewall issues will affect the project delivery

Time - unplanned and frequent change in requirements and resource constraints will affect delivery of software

Quality - Inadequate test will release software with defects which will affect the quality of the product

Question 6 – Stakeholder Analysis (RACI Matrix) - 3 Marks

Perform stakeholder analysis (RACI Matrix) to find out the key stakeholders who can take Decisions and who are the influencers

### Stakeholder Analysis

Stakeholder analysis is the process of identifying, assessing, and prioritizing stakeholders based on their influence, interest, and impact on a project or business initiative. This helps in effective communication and engagement strategies.

| NAME                      | POSITION       | * | R | Α | S | С | I |
|---------------------------|----------------|---|---|---|---|---|---|
| Mr.Henry                  | Client         |   |   |   |   |   |   |
| Ms.Monisha<br>Moudivender | ВА             |   |   |   |   |   |   |
| Mr.Vandanam               | РМ             |   |   |   |   |   |   |
| Ms.Juhi                   | Java Developer |   |   |   |   |   |   |
| Mr.Teyson                 | Java Developer |   |   |   |   |   |   |

| Ms.Lucie  | Java Developer |  |  |  |
|-----------|----------------|--|--|--|
| Mr.Tucker | Java Developer |  |  |  |
| Mr.Bravo  | Java Developer |  |  |  |
| Mr.Mike   | NW admin       |  |  |  |
| Mr.John   | DB admin       |  |  |  |
| Mr.Jason  | Tester         |  |  |  |
| Ms.Alekya | Tester         |  |  |  |
| Mr.Peter  | Stakeholder    |  |  |  |
| Mr.Kevin  | Stakeholder    |  |  |  |
| Mr.Ben    | Stakeholder    |  |  |  |
|           |                |  |  |  |

### Question 7 – Business Case Document - 3 Marks

Help Mr Karthik to prepare a business case document

#### **Business case document**

A Business Case Document is a formal justification for a project or initiative, outlining its benefits, costs, risks, and feasibility. It helps stakeholders make informed decisions about whether to proceed with the project.

| Project Name               | Farmer Friend - online agriculture shop |
|----------------------------|---|
| Project sponsor            | Mr.Henry                                |
| Project Manager            | Mr.Vandhanam                            |
| Project Approval date      | January 4                               |
| Project Last revision date | January 4                               |

| Project timescale         | 18 months  |
|---------------------------|--|
| Project Benefit           | Increase sale - will increase 20% in 8 months,<br>Happier customer rate will increase by 15%   |
| Project RIO               | First year - 80 lacs,<br>Second year - 180 lacs,<br>Third year - 250 Lacs  |
| Project Budget            | 2 crores Software - 100 lacs,<br>Project management - 50 lacs,<br>Project team - 50 lacs   |
| Project risk              | Right now the project looks straightforward. But concentrating on the sales and marketing team is important as it is a new launch needs customer support |
| Project option considered | Having additional staff to the sales team<br>Having a good marketing team for the campaign   |

### Summary

Farmers Friend the online agriculture store aims to supply agriculture products to farmers all over the country. This business case document discuss the benefits, risk, resources, problem, cost of the project

### **Project initiation**

The online agriculture store project initiated to facilitate remote area farmers to buy agriculture products such as seeds, fertilizer, pesticides anywhere through internet connection also companies and farmers can communicate with each other And to ease up the difficulty in day to day work such as low productivity and resources inefficiencies in farming.

### **Current problems**

Buying fertilizer, pesticides, seeds are difficult for farmers from remote area which will result in low productivity and resources inefficiencies in farming

Farmers and companies can not communicate directly with each other

Farmers need to go to shop to buy products and cannot check and compare the price, details and availability of product

Time and effort are spent in procuring products

Low quality products are sold in stores

Manufacturing companies cannot sell products to the farmers directly

Gap between digital tools and farmers

Farmers need transport to carry heavy products

High cost of agriculture products

This online agriculture store will solve all the 9 problems.

#### Resources

Technical team, Marketing team, tools, software, budget, time, system,

#### **Organizational changes**

Transferring from traditional purchase to digital purchase

Need of High speed internet, transportation, warehouse,Customer care service, technical team, Digital marketing, workshops, marketing team, cyber security

Creating mobile application for rural area users

### Identify stakeholder

Listing all the stakeholders might affect or affected by the project including internal stakeholder (employees, technical team, client) external stakeholders (farmers, suppliers, customers) prepare stakeholder analysis using RACI matrix for updating information and meetings

### Question 8 – Four SDLC Methodologies - 3 Marks

The Committee of Mr. Henry, Mr Pandu, and Mr Dooku and Mr Karthik are having a discussion on Project Development Approach.

Mr Karthik explained to Mr. Henry about SDLC. And four methodologies like Sequential Iterative

Evolutionary and Agile. Please share your thoughts and clarity on Methodologies

# What Is SDLC?

SDLC or the Software Development Life Cycle is a process that produces software with the highest quality and lowest cost in the shortest time possible. The goal of SDLC is to minimize project risks through forward planning so that software meets customer expectations during production Software development can be challenging to manage due to changing requirements, technology upgrades, and cross-functional collaboration. The software development lifecycle (SDLC) methodology provides a systematic management framework with specific deliverables at every stage of the software development process. As a result, all stakeholders agree on software development goals and requirements upfront and also have a plan to achieve those goals.. SDLC provides a well-structured flow of phases that help an organization to quickly produce high-quality software which is well-tested and ready for production use. the SDLC methodology focuses on the following phases of software development:

- Requirement analysis
- Planning
- Software design such as architectural design
- Software development
- Testing
- Deployment





# what is a project management methodoloy?

A project management methodology is a set of principles and practices that guide you in organizing your projects to ensure their optimum performance.

# SDLC METHODOLOGIES AND MODELS

Sequential - waterfall Iterative - RUP (RATIONAL UNIFIED PROCESS) Evolutionary - spiral Agile - scrum

# **Sequential PM Methodologies**

Sequential methodologies are applied to projects like building an airplane, construction of a building, or building a bridge. These are huge projects that are planned down to the tiniest details and there is no going back. They are planned in phases and each phase be completed before another begins.

# **Agile Methodologies**

Agile was first introduced to the world in 2001 via the Agile Manifesto of Agile Development. Agile project management is a process for managing a project that involves constant collaboration and working in iterations. It's the go to framework for software developers. There are four main rules of Agile:

> Individuals and interactions over processes and tools; Working software over comprehensive documentation; Client collaboration over contract negotiation; Responding to change over following a plan.

The one that really differentiates the agile approach is responding to change rather than following a set path. Agile is adaptive in nature, it works off the basis that a project can be continuously improved upon throughout its life cycle and adapt to changes quickly.

# **Iterative Methodology**

In the Iterative model, iterative process starts with a simple implementation of a small set of the software requirements and iteratively enhances the evolving versions until the

complete system is implemented and ready to be deployed. The iterative process is a part research and part development.

An iterative life cycle model does not attempt to start with a full specification of requirements. Instead, development begins by specifying and implementing just part of the software, which is then reviewed to identify further requirements. The iterative development process is a competitive method that uses lessons learned from past versions and applies them to future versions. For every iteration of a product or service, there are cycles of planning, design, implementation, and testing. This process is then repeated, producing a new version of the software at the end of each iteration of the model.

# **Evolutionary Model**

Evolutionary models in software engineering are iterative and incremental approaches that allow for the development of software systems through a series of iterations or releases. Each iteration involves the completion of a subset of the overall software requirements, allowing for continuous testing, feedback, and refinement. This approach enables the software to evolve and improve over time, allowing for changes to be made throughout the development process as new requirements and insights emerge. The evolutionary model is particularly beneficial in projects where the requirements are not fully understood or may change during the development process. By continuously refining and enhancing the software through iterative development, the evolutionary model helps ensure that the final product meets the evolving needs and expectations of the stakeholders.

## Question 9 – Waterfall RUP Spiral and Scrum Models - 3 Marks

They discussed models in SDLC like waterfall RUP Spiral and Scrum. You put forth your understanding on these models.

When the APT IT SOLUTIONS company got the project to make this online agriculture product store, there is a difference of opinion between a couple of SMEs and the project team regarding which methodology would be more suitable for this project. SMEs are stressing on using the V model and the project team is leaning more onto the side of waterfall model. As a business analyst, which methodology do you think would be better for this project?

# The rational unified process (RUP)

The rational unified process (RUP) is a software engineering and development process focused on using the unified modeling language (UML) to design and build software. Using the RUP process allows you to operate business analysis, design, testing and implementation throughout the software development process and its unique stages, helping you create a customized product. Its primary purpose is to enable the creation of high-quality software that satisfies the end user's requirements within a predictable budget and timeframe. There are four main phases in RUP: *Inception, Elaboration, Construction*, and *Transition*. Each phase has its own objectives, activities, and deliverables.



# Waterfall model

The Waterfall model is the earliest SDLC approach that was used for software development. It is very simple to understand and use. The Waterfall methodology is a sequential development process that flows like a waterfall through all phases of a project (analysis, design, development, and testing, for example), with each phase completely wrapping up before the next phase begins. So in a waterfall model, each phase must be completed before the next phase can begin and there is no overlapping in the phases.



# **Spiral model**

The Spiral Model is a software development model designed to control risk. It combines the idea of iterative development with the systematic, controlled aspects of the waterfall model.Each phase of spiral model in software engineering begins with a design goal and ends with the client reviewing the progress. The Spiral Model repeats steps of a project, starting with modest goals and expanding outward in ever-wider spirals (called rounds). Each round of the spiral constitutes a project, and each round may follow traditional software development methodology such as modified waterfall. A <u>risk analysis</u> is performed each round. Fundamental flaws in the project or process are more likely to be discovered in the earlier phases, resulting in simpler fixes. This lowers the overall risk of the project: large risks should be identified and mitigated. So Spiral model is a combination of iterative development process model and sequential linear development model i.e. the waterfall model with a very high emphasis on risk analysis. It implements the potential for rapid development of new versions of the software. Using the spiral model, the software is developed in a series of incremental releases.



# **Definition of Scrum**

According to The Scrum GuideTM, scrum is "a lightweight framework that helps people, teams and organizations generate value through adaptive solutions for complex problems.1" Scrum helps people and teams deliver value incrementally in a

collaborative way. As an agile framework, Scrum provides just enough structure for people and teams to integrate into how they work, while adding the right practices to optimize for their specific needs.Scrum is the most widely used and popular agile framework. The term agile describes a specific set of foundational principles and values for organizing and managing complex work. Scrum offers adaptability, agility, and efficiency to ensure a continuous flow of value to clients throughout project development.

# **Scrum Methodology & Process**

Scrum is precisely an evolution of Agile Management. Scrum methodology is based on a set of very defined practices and roles that must be involved during the software development process. It is a flexible methodology that rewards the application of the 12 agile principles in a context agreed by all the team members of the product.

Scrum is executed in temporary blocks that are short and periodic, called Sprints, which usually range from 2 to 4 weeks, which is the term for feedback and reflection. Each Sprint is an entity in itself, that is, it provides a complete result, a variation of the final product that must be able to be delivered to the client with the least possible effort when requested.

The process has as a starting point, a list of objectives/ requirements that make up the <u>project plan</u>. It is the client of the project that prioritizes these objectives considering a balance of the value and the cost thereof, that is how the iterations and consequent deliveries are determined.

On the one hand the market demands quality, fast delivery at lower costs, for which a company must be very agile and flexible in the development of products, to achieve short development cycles that can meet the demand of customers without undermining the quality of the result.

# The Scrum Team

A scrum team has three accountabilities (commonly known as roles):

- **Developers** -The Scrum Team consists of testers, designers, UX specialists, Ops engineers, and developers. Team members have different skill sets and cross-train each other, so no one person becomes a bottleneck in delivering work. On a scrum team, a developer is anyone on the team that is delivering work, including those team members outside of software development
- **Product Owner** -Is the representative of the stakeholders and customers who use the software. They focus on the business part and is responsible for the ROI of the project. They Holds the vision for the product and prioritizes the product backlog
- Scrum Master -The person who leads the team guiding them to comply with the rules and processes of the methodology.Scrum master manages the reduction of impediments of the project and works with the Product Owner to maximize the ROI. The Scrum Master is in charge of keeping Scrum up to date, providing coaching, mentoring and training to the teams in case it needs it.

The scrum team works together to achieve a shared goal and deliver value to users of their product or service.

# **Scrum Artifacts**

Scrum Teams use tools called Scrum artifacts to solve problems and manage projects. Scrum artifacts provide critical planning and task information to team members and stakeholders. There are three primary artifacts

- Product Backlog The Product Backlog is a dynamic list of features, requirements, enhancements, and fixes that must be completed for project success. It is essentially the team's to-do list, which is constantly revisited and reprioritized to adapt to market changes. The product owner maintains and updates the list, removing irrelevant items or adding new requests from customers.
- **Sprint Backlog** -The Sprint Backlog is the list of items to be completed by the development team in the current Sprint cycle. The set of product backlog items

selected for the sprint by the developers (team members), plus a plan for delivering the increment and realizing the sprint goal.A Sprint Backlog is flexible and can evolve during a Sprint.

 Increment - A sum of usable sprint backlog items completed by the developers in the sprint that meets the definition of done, plus the value of all the increments that came before. Each increment is a recognizable, visibly improved, operating version of the product.

The team displays its plans and progress so that all team members and stakeholders can always see what the team is accomplishing.

# **Scrum Events**

Scrum teams work in sprints, each of which includes several events (or activities). The events that are contained within each sprint are valuable opportunities to inspect and adapt the product or the process (and sometimes both).

- **The Sprint** A Sprint is the actual time period when the Scrum Team works together to finish an Increment. Two weeks is the typical length for a Sprint but can vary depending on the needs of the project and the team. Each sprint should bring the product closer to the product goal.
- Sprint Planning The entire scrum team establishes the sprint goal, what can be done, and how the chosen work will be completed. In this event, the team estimates the work to be completed in the next Sprint. Members define Sprint Goals that are specific, measurable, and attainable. At the end of the planning meeting, every Scrum member knows how each Increment can be delivered in the Sprint. Planning should be timeboxed to a maximum of 8 hours for a month-long sprint, with a shorter timebox for shorter sprints.
- Daily Scrum The developers (team members delivering the work) inspect the progress toward the sprint goal and adapt the sprint backlog as necessary, adjusting the upcoming planned work. A Daily Scrum is a short meeting in which

team members check in and plan for the day. They report on work completed and voice any challenges in meeting Sprint Goals. It is called a stand-up A daily scrum should be timeboxed to 15 minutes each day.

- **Sprint Review** The entire scrum team inspects the sprint's outcome with stakeholders and determines future adaptations. Stakeholders are invited to provide feedback on the increment.
- **Sprint Retrospective** The scrum team inspects how the last sprint went regarding individuals, interactions, processes, tools, and definition of done. The team identifies improvements to make the next sprint more effective and enjoyable. This is the conclusion of the sprint.

As a business analyst i think the v-model would be better for this project

Question 10 - Waterfall Vs V-Model - 2 Marks

Write down the differences between the waterfall model and V model.

# **Difference between V-Model and Waterfall Model**

The following table highlights the major differences between the V-Model and the Waterfall Model on the basis of the type of steps or phases involved in these two software development methodologies –

| PARAMETER  | V-MODEL                   | WATERFALL MODEL                 |
|------------|---------------------------|---------------------------------|
| Definition | V-Model is the            | In the Waterfall model, an      |
|            | development model in      | application is developed        |
|            | which the entire model is | first, after which it is tested |
|            | divided into various      |                                 |
|            |                           |                                 |

|                        | sub-development phases<br>where the corresponding<br>testing phase for each<br>development phase is<br>practiced.<br>For every stage in the<br>development cycle, there is<br>an associated testing<br>phase and the<br>corresponding testing<br>phase of the development | using different testing<br>techniques.<br>The complete process is<br>divided into several phases<br>among which one phase<br>should be completed in<br>order to reach the next<br>phase and testing is almost<br>at end phase of the |
|------------------------|---|--|
|                        | phase is planned in parallel.   | development.   |
| Type/Nature            | In the V-Model, the<br>execution of the phases<br>i.e., development and<br>testing happens in a<br>sequential manner so type<br>of V-Model is<br>sequential/parallel in<br>nature.  | Waterfall Model is a<br>relatively linear sequential<br>design approach as each<br>phase should be<br>completed in order to<br>reach the next phase. So<br>type of this model is<br>Continuous in nature.                            |
| Testing and Validation | In the V-Model, each<br>development phase get<br>tested at its own level and<br>hence no pending testing<br>occurs in this model also if<br>any validation requires to<br>be implemented then it  | In the Waterfall Model, the<br>testing occurs after<br>development is completed<br>and thus if any missing<br>validation is identified to be<br>implemented then first that<br>phase of development<br>needs to be recognized        |

|                      | could be implemented at that phase.   | and then that validation get implemented.  |
|----------------------|---|--|
| Cost and Complexity  | As sequential phases need<br>to be functional in case of<br>V-Model hence the cost is<br>higher as compared to that<br>of WaterFall Model also<br>the complexity is more<br>than WaterFall. | In the Waterfall Model, due<br>to linear development, only<br>one phase of development<br>is operational and hence<br>cost and complexity is low<br>as compared to that of<br>V-Model. |
| Defects              | In the V-Model, the<br>probability of total number<br>of defects in the<br>development of application<br>is low as testing is done in<br>parallel to the<br>development.                    | In the Waterfall Model, the<br>probability of total number<br>of defects in the<br>development of application<br>is high as testing is done<br>post development.                       |
| Backtracking         | V model doesn't restrict backtracking   | No way to return to an<br>earlier stage till the<br>development has ended  |
| Re-usability         | Most components can be re-used to a certain extent  | Limited  |
| User Involvement     | More involvement compared to a waterfall  | Only during the early planning phase   |
| Guarantee of Success | High  | Low  |

Question 11 – Justify your choice - 1 Marks As a BA, state your reason for choosing one model for this project.

The primary distinction between the V-Model and the Waterfall Model is that the V-Model identifies flaws during the testing phase, whereas the Waterfall Model identifies flaws at the outset.

The <u>V-model</u>, also known as the Verification and Validation model, is an <u>SDLC</u> model mainly used in waterfall development, in which the development and testing processes are arranged in pairs according to their level of detail, and the corresponding relationship between each phase is clearly indicated. In the V-shaped model, development and testing processes have the same level of detail, which helps ensure product quality by appropriately recognizing and setting the level, scope, and content of testing for the deliverables of each process developed and designed based on the waterfall model.

When there is a clear associated phase between development and testing, it's easier for businesses to manage the progress of the testing process. It is also easier for all parties involved in the project to be aligned, thereby reducing the risk of misunderstanding the work content, schedule, and deviations from the plan. In addition, revising plans for subsequent processes based on each phase's results helps refine the plans and more accurately grasp and predict the project's progress.

The V-shaped model has a corresponding testing level for each development phase. Therefore, it is easy to tell which test level should be conducted at which phase.

The risk of rework can be minimized by using a V-shaped model to define the level of each test, separating the phases, and proceeding to the next step only after sufficiently detecting and correcting the defects in each step.

By incorporating the V-model into the development and testing process and promoting its implementation within a project, we believe it will improve quality and efficiency.

Question 12 – Gantt Chart - 2 Marks

The Committee of Mr. Henry, Mr Pandu, and Mr Dooku discussed with Mr Karthik and finalised on the V Model approach (RG, RA, Design, D1, T1, D2, T2, D3, T3, D4, T4 and UAT)

Mr Vandanam is mapped as a PM to this project. He studies this Project and Prepares a Gantt chart with V Model (RG, RA, Design, D1, T1, D2, T2, D3, T3, D4, T4 and UAT) as development process and the Resources are PM, BA, Java Developers, testers, DB Admin, NW Admin.

#### Gnatt chart

A Gantt Chart is a visual project management tool that displays tasks, timelines, and dependencies in a bar chart format. It helps track progress and ensure timely project completion.

| Task and Resource   |             | 2           | 02          | 3       |             |             | 2           | 202         | 23      |             |        |             | 2       | 02          | 3           |             |   |    | 20      | 24      |   |    |   | 202 | 24 |    |
|---------------------|-------------|-------------|-------------|---------|-------------|-------------|-------------|-------------|---------|-------------|--------|-------------|---------|-------------|-------------|-------------|---|----|---------|---------|---|----|---|-----|----|----|
|                     | J<br>a<br>n | F<br>e<br>b | N<br>a<br>r | VI<br>a | A<br>p<br>r | M<br>a<br>y | נ<br>ו<br>ר | J<br>u<br>n | J<br>ul | A<br>u<br>g | e<br>p | 6<br>9<br>9 | O<br>ct | N<br>0<br>V | 4<br>><br>, | D<br>e<br>c | J | ar | Fe<br>b | Ma<br>r | ı | Ар | r | Мау | Jı | ın |
| RG-BA               |             |             |             |         |             |             |             |             |         |             |        |             |         |             |             |             |   |    |         |         |   |    |   |     |    |    |
| RA-BA               |             |             |             |         |             |             |             |             |         |             |        |             |         |             |             |             |   |    |         |         |   |    |   |     |    |    |
| DESIGN-PM;DEV,DB,NW |             |             |             |         |             |             |             |             |         |             |        |             |         |             |             |             |   |    |         |         |   |    |   |     |    |    |
| D1-PM;DEV,DB,NW     |             |             |             |         |             |             |             |             |         |             |        |             |         |             |             |             |   |    |         |         |   |    |   |     |    |    |
| T1-PM;DEV,DB,NW     |             |             |             |         |             |             |             |             |         |             |        |             |         |             |             |             |   |    |         |         |   |    |   |     |    |    |
| D2-PM;DEV,DB,NW     |             |             |             |         |             |             |             |             |         |             |        |             |         |             |             |             |   |    |         |         |   |    |   |     |    |    |
| T2-PM;DEV,DB,NW     |             |             |             |         |             |             |             |             |         |             |        |             |         |             |             |             |   |    |         |         |   |    |   |     |    |    |

| D3-PM;DEV,DB,NW |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------|--|--|--|--|--|--|--|--|--|--|--|--|
| T3-PM;DEV,DB,NW |  |  |  |  |  |  |  |  |  |  |  |  |
| D4-PM;DEV,DB,NW |  |  |  |  |  |  |  |  |  |  |  |  |
| T4-PM;DEV,DB,NW |  |  |  |  |  |  |  |  |  |  |  |  |
| UAT             |  |  |  |  |  |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |  |  |  |  |

Question 13 - Fixed Bid Vs Billing - 2 Marks

The Committee of Mr. Henry, Mr Pandu, and Mr Dooku is now discussing about the funds and how to release the funds for development. They were studying Fixed Bid model and Billing Model.

Share your knowledge on Fixed Bid model and Billing Model.

# **BILLING MODEL**

A Time & Materials project is billed based on the number of hours worked, at the hourly, daily, or monthly fixed billing rates assigned for that project. This model involves regularly paying for work completed. With this model, the customer plays a greater role in the development of the software solution and carries all risks related to the scope of work. The level of responsibility that the client carries for the whole development projects. The customer gets set up with a team and is billed for the actual time spent on development.

This pricing model is typically more fluid than a fixed price one. Similar to a fixed price contract, a time and material pricing model would still require the entire project scope be built out ahead out time. However, the project would need to be broken into phases. The contractor and project owner would meet every time a billing is submitted to review the time spent and materials used.

This model takes a much more granular approach to managing a project. It requires thorough tracking and a detailed invoice breakdown of costs. Every time the contractor bills the owner, they need to show exactly what hours were spent, who spent them, and what work was accomplished. These details enable the project owner to know exactly what they're paying for and where the project stands.

# **FIXED BID**

A Fixed Bid project is billed using a flat amount, regardless of the number of hours worked. This flat amount can be applied to the project as a whole, or to each week or month of the project. Since Fixed Bid projects are duration-based, they require a start and end date. A fixed-price contract is based on an estimate of the amount of work that needs to be done. <u>Project requirements</u> need to be written to define this scope of work. Wireframes also need to be created to help the development team figure out the hours necessary to implement all features. With a fixed-price project, the service provider and the customer both carry some scope-related risk. Any extra work (when clients want to add a totally new feature that was not specified in the documentation) usually goes under an additional agreement. In this case, the client must pay extra.

In this model, it's important to discuss everything before the actual development in order to estimate the cost of the software product. The fixed-price model ensures that a project is done and delivered within a specific timeframe and budget.

### Question 14,15,16,17,18,19,20 - Timesheets - 7 Marks

Please share Sample Timesheets of a BA in various SDLC Stages RG, RA, Design, D1, T1, D2,T2, D3, T3, D4, T4 and UAT, Deployment n Implementation

- ➢ RG Timesheet of a BA
- ➢ RA Timesheet of a BA
- ➤ Design Timesheet of a BA
- > Development Timesheet of a BA
- ➤ Testing Timesheet of a BA
- ➤ UAT Timesheet of a BA
- > Deployment n Implementation Timesheet of a BA

#### Employee Name: Monisha Moudivender

Project Manager: Mr.Vandanam

#### **REQUIREMENT GATHERING:**

| TASK                               | DATE      | START TIME | END TIME | TOTAL<br>HOURS |
|------------------------------------|-----------|------------|----------|----------------|
| Discussion with client             | 3.1.2023  | 9.00 AM    | 6.00 PM  | 9              |
| Prepared questions for elicitation | 4.1.2023  | 9.00 AM    | 6.00 PM  | 9              |
| Requirement gathering              | 9.1.2023  | 9.00 AM    | 6.00 PM  | 9              |
| Meeting with stakeholders          | 14.1.2023 | 9.00 AM    | 6.00 PM  | 9              |

**REQUIREMENT ANALYSIS:** 

| TASK                               | DATE      | START TIME | END TIME | TOTAL<br>HOURS |
|------------------------------------|-----------|------------|----------|----------------|
| Discussion with client             | 3.1.2023  | 9.00 AM    | 6.00 PM  | 9              |
| Prepared questions for elicitation | 4.1.2023  | 9.00 AM    | 6.00 PM  | 9              |
| Requirement gathering              | 9.1.2023  | 9.00 AM    | 6.00 PM  | 9              |
| Meeting with stakeholders          | 14.1.2023 | 9.00 AM    | 6.00 PM  | 9              |

#### DESIGN:

| TASK                            | DATE      | START TIME | END TIME | TOTAL<br>HOURS |
|---------------------------------|-----------|------------|----------|----------------|
| Clarified doubts of development |           |            |          |                |
| team                            | 8.3.2023  | 9.00 AM    | 6.00 PM  | 9              |
| Meeting with development team   | 12.3.2023 | 9.00 AM    | 6.00 PM  | 9              |
| Updates on development          | 19.3.2023 | 9.00 AM    | 6.00 PM  | 9              |
| Discussion with client          | 24.3.2023 | 9.00 AM    | 6.00 PM  | 9              |

### **DEVELOPMENT**:

| TASK                          | DATE      | START TIME | END TIME | TOTAL<br>HOURS |
|-------------------------------|-----------|------------|----------|----------------|
| Assist and review the test    | 2.4.2023  | 9.00 AM    | 6.00 PM  | 9              |
| Discussion with testers       | 7.4.2023  | 9.00 AM    | 6.00 PM  | 9              |
| Updates on testing            | 16.4.2023 | 9.00 AM    | 6.00 PM  | 9              |
| Meeting with development team | 26.4.2023 | 9.00 AM    | 6.00 PM  | 9              |

#### **TESTING:**

| TASK                             | DATE      | START TIME | END TIME | TOTAL<br>HOURS |
|----------------------------------|-----------|------------|----------|----------------|
| Validate and verify product with |           |            |          |                |
| team                             | 28.4.2023 | 9.00 AM    | 6.00 PM  | 9              |
| Assist and review the test       | 18.4.2023 | 9.00 AM    | 6.00 PM  | 9              |
| Discussion with client and team  | 29.4.2023 | 9.00 AM    | 6.00 PM  | 9              |
| Meeting with stakeholders        | 30.4.2023 | 9.00 AM    | 6.00 PM  | 9              |

### UAT:

| TASK                                  | DATE      | START TIME | END TIME | TOTAL<br>HOURS |
|---------------------------------------|-----------|------------|----------|----------------|
| Updating results                      | 25.5.2023 | 9.00 AM    | 6.00 PM  | 9              |
| Validate and verify product with team | 26.5.2023 | 9.00 AM    | 6.00 PM  | 9              |
| Discussion with client and team       | 27.5.2023 | 9.00 AM    | 6.00 PM  | 9              |
| Meeting with stakeholders             | 28.5.2023 | 9.00 AM    | 6.00 PM  | 9              |

### DEPLOYMENT AND IMPLEMENTATION:

| TASK                                 | DATE       | START TIME | END TIME | TOTAL<br>HOURS |
|--------------------------------------|------------|------------|----------|----------------|
| Discussion with client and team      | 9.10.2023  | 9.00 AM    | 6.00 PM  | 9              |
| Requirement documentation            | 12.10.2023 | 9.00 AM    | 6.00 PM  | 9              |
| Clarified doubts of development team | 18.10.2023 | 9.00 AM    | 6.00 PM  | 9              |
| Requirement analysis                 | 22.10.2023 | 9.00 AM    | 6.00 PM  | 9              |

5 Quarterly Audits are planned Q1, Q2, Q3, Q4, Q5 for this Project

What is your knowledge on how these Audits will happen for a BA?

Performing a software audit on a business analyst typically involves reviewing the tools they use, ensuring compliance with licensing agreements, assessing data security measures, and evaluating the effectiveness of their software in meeting business objectives

- 1. Tool Usage Review: Examine the software tools used by the business analyst for requirements gathering, analysis, documentation, and communication. This includes tools like Microsoft Visio, Lucidchart, Jira, Confluence, or specialized tools for business process modeling.
- 2. Licensing Compliance: Verify that all software used by the business analyst is properly licensed. Check the number of licenses purchased against the number of users, ensuring compliance with vendor agreements and avoiding any legal issues related to software piracy.
- 3. Data Security Assessment: Evaluate the security measures in place for handling sensitive business data within the software tools. This involves assessing encryption protocols, access controls, user permissions, and data storage practices to mitigate the risk of unauthorized access or data breaches.
- 4. Integration Capability: Assess whether the software tools used by the business analyst integrate seamlessly with other systems and applications within the organization's IT infrastructure. Compatibility with existing software solutions is crucial for efficient data exchange and workflow automation.
- 5. Effectiveness Evaluation: Determine how effectively the software tools support the business analyst's tasks and objectives. This includes evaluating features such as ease of use, customization options, reporting capabilities, and scalability to accommodate evolving business needs.
- 6. User Training and Support: Review the availability of training resources and technical support for the software tools used by the business analyst. Adequate training ensures that users can maximize the potential of the software, while responsive support services help troubleshoot any issues that may arise during usage.
- 7. Cost Analysis: Analyze the total cost of ownership (TCO) associated with the software tools, considering not only the initial purchase or subscription fees but also ongoing maintenance, upgrades, and support costs. Assess whether the benefits derived from the software justify the investment.

- 8. Compliance with Industry Standards: Ensure that the software tools align with relevant industry standards and best practices for business analysis, such as those defined by the International Institute of Business Analysis (IIBA) or the Project Management Institute (PMI).
- 9. Feedback Collection: Gather feedback from the business analyst and other stakeholders regarding their experience with the software tools. Identify any pain points, usability issues, or feature requests that could inform future improvements or adjustments to the software environment.

By conducting a comprehensive software audit along these lines, organizations can ensure that their business analysts have access to the right tools and resources to effectively perform their roles while maintaining compliance, security, and efficiency standards.

#### **Quarterly 1 Audit Report**

Farmer Friend System Audit Report from January 2023 to April 2023

Report Number 1

Date:1.5.2023

**Tool Usage Review** 

#### Objective:

To assess the usage of software tools by business analysts for requirements gathering, analysis, and documentation, and to identify opportunities for improvement.

| Areas of Audit             | Findings and Observation   | Recommendation   |
|----------------------------|--|--|
| Frequently used tools list | The most commonly used<br>tools among business<br>analysts include Microsoft<br>Visio, Jira, and Confluence. | Explore the possibility of implementing additional software tools or modules to address specific analysis needs. |
| Efficiency of tools        | While these tools are<br>effective for requirements<br>documentation and project                             | Investigate integration<br>options to streamline<br>workflow and enhance   |

|                           | management, there is a need<br>for additional tools to support<br>specialized analysis tasks.  | collaboration between<br>different toolsets.  |
|---------------------------|--|---|
| Business analyst feedback | Feedback from business<br>analysts indicates a desire for<br>more integration between<br>tools and enhanced<br>collaboration features. | Provide training and support<br>to ensure business analysts<br>can effectively utilize the full<br>capabilities of the existing<br>toolset. |

### Quarterly 2 Audit Report

Farmer Friend System Audit Report from May 2023 to August 2023

Report Number 2

Date:10.9.2023

Quarter 2: Licensing Compliance

Objective:

To ensure compliance with software licensing agreements and mitigate the risk of

non-compliance.

| Areas of Audit           | Findings and Observation   | Recommendation   |
|--------------------------|--|--|
| License verification     | All software licenses are up<br>to date, and the number of<br>licenses purchased aligns<br>with the number of users. | Continue to conduct regular<br>audits to ensure ongoing<br>compliance with software<br>licensing agreements.       |
| Unlicensed software list | No instances of unlicensed<br>software usage were<br>identified during the audit.                                    | Implement processes for<br>tracking software usage and<br>license renewals to prevent<br>any lapses in compliance. |

#### Quarterly 3 Audit Report

Farmer Friend System Audit Report from September 2023 to December 2023

Report Number 3

Date:5.1.2024

Quarter 3: Data Security Assessment

Objective:

To evaluate the effectiveness of data security measures implemented within software tools used by business analysts.

| Areas of Audit            | Findings and Observation  | Recommendation  |
|---------------------------|---|---|
| Data storage              | Encryption protocols, access<br>controls, and data storage<br>practices meet industry<br>standards for data security. | Continue to monitor<br>emerging threats and<br>vulnerabilities and update<br>security measures<br>accordingly.                              |
| Vulnerability in security | No significant vulnerabilities<br>or gaps in security measures<br>were identified during the<br>assessment.           | Implement regular security<br>awareness training for<br>business analysts to promote<br>best practices for data<br>protection.              |
| Security verification     | Regular security updates and<br>patches are applied to<br>mitigate emerging threats and<br>vulnerabilities.           | Conduct periodic penetration<br>testing and vulnerability<br>assessments to proactively<br>identify and address any<br>security weaknesses. |

### Quarterly 4 Audit Report

Farmer Friend System Audit Report from January 2024 to April 2024
Report Number 4

Date:8.5.2024

Quarter 4: Integration Capability

Objective:

To assess the integration capabilities of software tools used by business analysts with other systems and applications.

| Areas of Audit              | Findings and Observation   | Recommendation  |
|-----------------------------|--|---|
| Integration capabilities    | Software tools demonstrate strong integration capabilities with existing IT infrastructure.  | Explore additional integration<br>options to further optimize<br>workflow automation and<br>data exchange.                                      |
| Data flow                   | Data exchange between<br>different software solutions is<br>seamless, facilitating efficient<br>workflow automation.               | Collaborate with IT teams to<br>identify potential integration<br>points and prioritize<br>integration initiatives based<br>on business impact. |
| Opportunity for integration | Opportunities for further<br>integration exist to streamline<br>processes and enhance<br>collaboration between<br>different teams. | Provide training and support<br>to ensure business analysts<br>can effectively utilize<br>integrated software solutions.                        |

#### **Quarterly 5 Audit Report**

Farmer Friend System Audit Report from May 2024 to June 2024

Report Number 5

Date:3.7.2024

Quarter 5: Effectiveness Evaluation

Objective:

To conduct a comprehensive evaluation of the effectiveness of software tools in

supporting the business analysis process.

| Areas of Audit               | Findings and Observation  | Recommendation   |
|------------------------------|---|--|
| Efficiency of software tools | Software tools effectively<br>support requirements<br>gathering, analysis, and<br>documentation tasks<br>performed by business<br>analysts. | Prioritize enhancements<br>based on feedback from<br>business analysts and<br>stakeholders.  |
| Tools review                 | User satisfaction with the<br>current toolset is generally<br>high, with positive feedback<br>on ease of use and<br>functionality.          | Work closely with software<br>vendors to explore<br>customization options and<br>additional features to meet<br>specific business needs.           |
| Areas of improvement         | Areas for improvement<br>include enhancing reporting<br>capabilities and providing<br>advanced analytics features.                          | Provide ongoing training and<br>support to ensure business<br>analysts can leverage the full<br>capabilities of the software<br>tools effectively. |

Conclusion:

The quarterly software audits have provided valuable insights into the usage,

compliance, security, integration, and effectiveness of software tools used by business analysts. By implementing the recommendations outlined in this report, we can continue to optimize the software environment to support business analysis processes effectively and efficiently. Regular monitoring and evaluation will be essential to ensure ongoing compliance, security, and alignment with evolving business requirements.

# What Is A Software Audit And Why Is It Performed?

A software audit is an independent review of software products, processes, and systems. The purpose of a software audit is to ensure that software development practices and products meet industry standards and organizational requirements. A software audit can help identify issues such as security vulnerabilities, non-compliance with licensing agreements, and performance problems.

Software audits are usually performed by internal or external auditors who are experts in the software development process. They examine the software development life cycle (SDLC) to ensure that it is followed correctly and that the software product meets the requirements of the business and its stakeholders. The goal of a software audit is to identify areas of improvement and to provide recommendations for enhancing the quality and effectiveness of the software product.

There are two primary methods for conducting such analysis:

**Internal auditing** is performed on a regular basis by the in-house team and is generally more frequent.

**External audits** are often performed by a third party with the goal of obtaining an unbiased report, particularly if the software must comply with specific policies, licenses, and legislative regulations. In addition, if the in-house staff lacks the necessary expertise, an external audit of software can be requested.

# When Should Conduct A Software Audit?

Every software product requires regular internal comprehensive audits in order to remain secure, up-to-date, and growing. A software audit can be conducted at any stage of the SDLC. However, it is best to conduct an audit when the software is in its development or testing phase. This is because it is easier to identify and fix issues early in the SDLC, rather than after the software has been released.

Additionally, it can also be conducted when there is a change in the business requirements, regulatory environment, or technology landscape. These changes can affect the software product, and a software audit can help identify any gaps or weaknesses in the product.

As a result of the examination, software owners gain a better understanding of the flaws that must be addressed, whether it means replacing a few features or updating the entire platform.

# What things Needs To be considered before Auditing Software?

Before conducting a software audit, it is important to consider the scope of the audit, the audit team, and the audit objectives. The scope of the audit should be defined clearly to ensure that all relevant areas are covered. The audit team should be comprised of experts in software development and auditing. The audit objectives should be clearly defined and aligned with the business goals.

It is also important to consider the audit methodology, tools, and techniques to be used in the audit. The audit methodology should be consistent with industry standards and best practices. The tools and techniques used in the audit should be appropriate for the software product and the audit objectives.

# How to prepare for a Software Audit as a Client

If the customer is sufficiently prepared for the software audit, it speeds up the process and saves money. The general software audit checklist for a customer to be prepared for an audit is discussed below:

#### Determining the scope of the Software Audit

The audit always revolves around some goals that the customer wants to accomplish. Therefore, it is important to identify these goals and ultimately set the scope of the audit. As discussed earlier, some audits will focus only on the quality aspects, while some can study the usability of software, it is important to identify what has to be accomplished by the audit.

#### Gaining an understanding of the Software Audit Process

Having some understanding of the audit process helps the customer in being helpful in case of an external audit and can save a lot of time. If a third-party software audit partner agency is performing the audit, there is no need to spend too much time on it, but a rough idea of what happens in an audit would be very helpful.

#### **Communicate with Software Vendors**

Some proprietary software products are purchased from software vendors. Maintaining good communication with a software vendor will be very helpful in case of an audit. If you keep in touch with your software vendor, there will be a higher chance that they will support you swiftly whenever you need it.

#### Proof of Licenses

The auditors will need to check the proof of ownership of any licenses that are being used by the software. It is important to ensure that you have proper licenses from your software publisher that allow you to use the tools required by your software.

#### Using a Software Asset Management tool

Software Asset Management (SAM) tools are digital asset management in a company. They are very useful in managing software licenses, tracking inadequate use of these licenses, and detecting unused licenses. If a company uses a SAM and keeps track of all its software licenses, it makes largely facilitates the audits. Sometimes it is a good idea to hire a third-party software asset management consultant to do this for you.

#### **Performing Internal Audits**

Audits are performed internally to make a company ready for external audits and can also save costs. These audits should be regularly performed and should be considered an integral process. Preventative maintenance will save resources, whereas reactive fines will consume a significant percentage of your budget.

# What should be included in the delivered Software Audit Result?

The main deliverable of a software audit is the audit report which is a summary of the audit processes and includes the identified problems and their suggested solutions by the auditors. The audit report may talk about several action items, including unused software tools which should be deleted, technical problems that need fixes, potential security vulnerabilities, outdated tools, suggestions to purchase new licenses, suggested software vendors, and plans for the next audit. The report should provide a summary of the audit scope, objectives, and methodology. It should also include a detailed analysis of the findings and recommendations for improvement.

The report should be easy to understand and should provide actionable recommendations. It should also include a prioritized list of recommendations, based on their importance and impact on the software product.

The auditors may also do an audit review meeting with the customers to discuss the audit report. In this meeting, the audit report's findings and any potential issues are discussed.

The organization receives the auditors' findings indicating areas that need changes. The company can meet with the software vendors to discuss how it will fix any mistakes.

# **Benefits of Performing Software Audits**

There are numerous benefits of performing software audits. Some of the important ones will be discussed below:

#### Maintaining Software Quality

Software audits help maintain software quality and also for finding areas for improvement. It enables you to keep all of the applications operating properly. Software and applications are often upgraded and updated. Every new edition includes beneficial changes, such as cybersecurity-related ones. Some of the problems in the software are identified, and after the analysis, it might become evident that some modules might need to be changed or even completely replaced. Furthermore, the usage of some tools might be increased or restricted based on what you learn from an audit. The audit might make it clear the need to purchase some new tools which further improve the quality of the software.

#### Maximizing license use and getting rid of unwanted licenses

During an audit, the state of current licenses can be identified, and they can be better utilized for better software usage. The audit will also check whether the licenses are up to date or not. Having up-to-date licenses will also maximize the benefits that can be obtained. Furthermore, there can be some inactive licenses, the audit team can identify these licenses and remove them accordingly.

#### Improving Business Operations

Whenever the software requires some proprietary tools to function properly, it is worth performing a thorough analysis to check whether the tools that are about to be purchased will be compatible with all the others currently present. Doing an audit at the right stage will ensure to purchase of compatible tools that go well with the business goals, thus enhancing the business operations.

#### Fulfilling Legal and Industry Requirements

During the audit, it can be analyzed whether the software complies with the IEEE standards, and in case of any non-compliance, the audit can suggest changes that will improve the software. Apart from these standards, the software is also analyzed for legal and regulatory compliance, which ensures that the software is fulfilling all the legal requirements and it is very beneficial in the long run.

# Conclusion

In conclusion, a software audit is an essential part of software development.Software audits are a close inspection of software to find various problems. They can be performed internally or by an external organization. An internal audit can help keep things on track. In contrast, an external audit provides an unbiased observation of the software and dives into usually unexplored areas, such as performing a compliance audit, ensuring industry standards, and checking for legal issues.

There are many benefits to performing software audits, the biggest is saving money. After a thorough software audit is performed and the action items are addressed, the software will be of higher quality, more secure, and more compliant with industry and legal requirements.

#### Question 22 – BA Approach Strategy - 5 Marks

Before the Project is going to Kick Start, The Committee asked Mr Karthik to submit BA Approach Strategy

Write BA Approach strategy (As a business analyst, what are the steps that you would need to follow to complete a project – What Elicitation Techniques to apply, how to do Stakeholder Analysis RACI/ILS, What Documents to Write, What process to follow to Sign off on the Documents, How to take Approvals from the Client, What Communication Channels to establish n implement, How to Handle Change Requests, How to update the progress of the project to the Stakeholders, How to take signoff on the UAT- Client Project Acceptance Form )

## **BA Approach Strategy**

Project background

The domain of this project is agriculture

PESTLE Analysis for this project are

Political Factor - Government policies and regulations for online shopping,tax regulations

Economical Factors - Economy fluctuation will affect the customer spending habit

Social Factors - It influence customer online shopping behavior

Technology Factor - Network infrastructure,technology advancement will affect the customers shopping experience

Legal Factors - Data protection, copyrights, customer protection regulations

Environmental Factors - Packaging and shipping practices

## **Elicitation techniques**

Prototyping, Brainstorming, Focus group and Interview

#### Stakeholder Analysis

Identify stakeholders by listing down the people affected by the project and determine stakeholders significances based on influence, power and involvement. Understand the stakeholder expectation by elicitation techniques and document the requirement. Evaluate the stakeholder based on influence and role in project then document the stakeholder analysis using RACI matrix

#### Documents

Business plan, business case document, business requirement document, functional requirement document, usecase document, requirement traceability matrix

#### Sign - off

Once BA finish documents like BRD FRD will review it with the stakeholders and send ia formal request to all the stakeholders for stakeholder approval. After approval all the stakeholders will sign off all the document

#### **Client approval**

Document and understand all the client needs and requiremen and propose solution and its process by using visual aids such as usecase, activity diagrams to client. After getting clients feedback on propose solution, send a formal approval request. Once approvel obtained prepare sign off document and save it as a record for future reference for clarity on clients approval on proposed solution

## **Communication Channels**

Email is a primary communication channel for sending formal updates, documents, meeting invitations, and requests for feedback. project management tools such as Asana, Trello, or Jira to manage tasks, track progress, and facilitate communication among team members.collaboration platforms like Microsoft Teams, Slack, or Zoom to facilitate real-time communication, instant messaging, video conferencing, and virtual meetings. document sharing platforms such as Google Drive, Microsoft SharePoint, or Dropbox to store, share, and collaborate on project documents, requirements, and deliverables. weekly status reports summarizing project progress, achievements, upcoming tasks, risks, and issues. stakeholder workshops or focus groups to gather requirements, elicit feedback, and facilitate consensus-building.

#### Handle Change Requests

As a BA once I have a clear understanding of the change, I document it appropriately, including the updated requirements, impact analysis, and any associated risks and I will convey this to Change Control Board to discuss and get approval for change request

#### How to update the progress of the project to the Stakeholders

By using communication channels for updating stakeholders like email updates, status reports, presentations, meetings, collaboration tools, project management software, or a combination of these channels.Updating could be weekly, bi-weekly, monthly, or at key project milestones, depending on the project's complexity and timeline.RTM will include updates on completed tasks, milestones achieved, issues encountered, risks identified, and any changes to the project plan and shared to stakeholders.Follow up with stakeholders after providing progress updates to address any additional questions or concerns they may have. Keep the lines of communication open and be responsive to stakeholder needs throughout the project lifecycle.

Explain and illustrate 3-tier architecture?

# **3-Tier Architecture**

The 3-Tier Architecture, also known as the three-layer architecture, is a client-server software architecture that separates an application into three distinct layers, or tiers. Three-tier architecture is a well-established software application architecture that organizes applications into three logical and physical computing tiers:presentation tier, an application tier and a data tier. The data tier stores information, the application tier handles logic and the presentation tier is a graphical user interface (<u>GUI</u>) that communicates with the other two tiers.

The chief benefit of three-tier architecture is that because each tier runs on its own infrastructure, each tier can be developed simultaneously by a separate development team, and can be updated or scaled as needed without impacting the other tiers. In a three-tier application, all communication goes through the application tier. The presentation tier and the data tier cannot communicate directly with one another. The purpose of this architecture is to improve modularity, maintainability, scalability, reliability and flexibility of the software system.

 Presentation Tier: The presentation tier is the user interface and communication layer of the application, where the end user interacts with the application. Its main purpose is to display information to and collect information from the user. This top-level tier can run on a web browser, as desktop application, or a graphical user interface (GUI), for example. Web presentation tiers are usually developed using HTML, CSS and JavaScript. Desktop applications can be written in a variety of languages depending on the platform.

- 2. Application Tier: The application tier, also known as the logic tier or middle tier, is the heart of the application. In this tier, information collected in the presentation tier is processed sometimes against other information in the data tier using business logic, a specific set of business rules. The application tier can also add, delete or modify data in the data tier. The application tier is typically developed using Python, Java, Perl, PHP or Ruby, and communicates with the data tier using API calls.
- Data Tier: The data tier, sometimes called database tier, data access tier or back-end, is where the information processed by the application is stored and managed. Popular database systems for managing read/write access include <u>MySQL</u>, PostgreSQL, Microsoft SQL Server and <u>MongoDB</u>.



Question 24 – BA Approach Strategy for Framing Questions - 3 Marks

Business Analyst should keep what points in his/her mind before he frames a Question to ask to the Stakeholder (5W 1H – SMART – RACI – 3 Tier Architecture – Use Cases, Use case Specs, Activity Diagrams, Models, and Page designs)

## 5W1H

The 5W1H is a questioning approach and a problem-solving method that answers all the basic elements within a problem which are what, who, when, where, why, and how. It aims to view ideas from various perspectives and gain n an in-depth understanding of a specific situation. This method is commonly utilized as a continuous process-improvement technique in an organization.

#### What

The *what* element should clearly describe the situation, the specific problem, or basically explain the purpose of the method usage. If possible, it should also state the overall goal for implementing the solution that would be identified.

#### Who

*Who* refers to the specific people or group relevant to the issue or the situation. It should include the person who discovered the problem, who can possibly solve it, and who will be responsible for implementing the possible solution.

#### Where

The *where* element should contain the exact location or position of the recognized issue. It can be a place, facility, or even a certain process where the solution is to be implemented.

#### When

*When* should include all the components of the situation pertaining to anything related to dates. It should state the timeline, deadline, duration, or any other details that could help in the resolution of the problem.

#### Why

Although each of them are vital in achieving an effective questioning approach, the *why* is probably one of the most important elements of the 5W1H method. It explains in detail the reason and objectives behind the need for action or why there's a need to do the 5W1H method in the first place. This last *W* is also often asked five times to discover the root cause of the situation and to prevent it from recurring. This approach is called the 5 Whys analysis.

#### How

How, as the last element of the method, specifies the steps on how the identified plan/s should be carried out. It should also include all the resources, tools, methods, means, and even the expenditure needed for the endeavor to be effective.
To summarize, asking these questions enables those who will use the 5W1H method to get to the bottom of things by systematically structuring thoughts and emphasizing important information. Consequently, this can help recognize potential issues and possible solutions related to the scenario.

The 5W1H method is popular, simple and easy to use. It may be used in various situations. Here are a few examples.

#### 1. To define your project

Before starting a project, it helps to be organised and above all, to know all the details of the project.

This questioning method is a useful tool to define all the aspects of a project before starting.

- What?: What is the project? What are the objectives?
- Who?: Who is the client? Who are the users? Who are the members of the team ?
- Where?: Where will the project take place?
- When?: What is the date of the consignment? When will it start? How long will it last?
- How:? Which financial, HR and technical means have been put in place to create the project? By what means will you progress?
- How many?: What budget do you have at your disposal? What are the delays in the realisation?

• Why: Why has the project been started? What are the reasons? What is the goal?

#### 2. To solve a problem

The 5W1H method is an irreplaceable problem resolution tool because this allows you to understand a potentially problematic situation by asking the right questions.

- What: description of the problem;
- Who: the responsible parties;
- Where: the location of the problem;
- When: temporal characteristics of the problem (at what point in time, how often)
- How: the effects of the problem?
- Why: reasons, cause of the problems?

## The three-tier architecture

The three-tier architecture is the most popular implementation of a multi-tier architecture and consists of a single presentation tier, logic tier, and data tier. The following illustration shows an example of a simple, generic three-tier application.

- Application Tier: Also known as the user interface (UI) tier, this layer is responsible for presenting information to users and collecting user input. It includes components such as web pages, mobile apps, or desktop interfaces. In a business analysis context, the presentation tier focuses on understanding user requirements, designing intuitive interfaces, and ensuring that user needs are met effectively.
- Business Logic Tier: The business logic tier, also called the application tier or middle tier, contains the core logic and processing rules of the application. It handles tasks such as data validation, business rules enforcement, and workflow management. Business analysts collaborate closely with stakeholders to analyze

business processes, identify requirements, and translate them into functional specifications for developers to implement in this tier.

3. Data Tier: The data tier, also referred to as the backend or data access layer, is responsible for managing and storing data used by the application. It includes databases, data warehouses, and other data storage mechanisms. Business analysts working on a 3-tier application analyze data requirements, define data models, and ensure that the application interacts with data sources efficiently and securely.

#### Application layer questions can be

How many longins are required ? How many user will be using the system? How many user will currently use the application? Home page feature and functionalities ? Business rules ? Business requirements? Availability ? Reliability ?

#### Business logic layer questions can be

Reusable component Frequently changing component Governing body rules and regulation complaince Third-party plug-ins like payments gateways mail servers printer

#### Database layer

Database component

## **RACI** matrix

A RACI matrix is a document that clarifies which individuals or groups are responsible for a project's successful completion, and the roles that each will play throughout the project. The acronym RACI stands for the different responsibility types: Responsible, Accountable, Consulted, and Informed.

Responsible (R): This is the person or people who are responsible for completing a specific task or activity. They are the "doers" who are accountable for the execution of the task.

Accountable (A): This is the person who ultimately owns the task or decision. They have the authority to make final decisions and are ultimately answerable for the outcome. There should only be one person accountable for each task or decision.

Consulted (C): These are the individuals or stakeholders who need to provide input or expertise before a decision is made or a task is completed. They are consulted for their insights and expertise but are not ultimately responsible or accountable.

Informed (I): These are the individuals or stakeholders who need to be kept informed about the progress or outcome of a task or decision. They are not directly involved in the execution but need to be aware of what's happening.

In business analysis, a RACI matrix helps ensure that everyone involved in a project or process understands their role and responsibilities, minimizes confusion, prevents duplication of effort, and improves communication and accountability. It's a valuable tool for promoting efficiency and clarity in project management and business analysis activities.

## Use case diagram

A use case is a methodology used in system analysis to identify, clarify and organize system requirements. The use case is made up of a set of possible sequences of interactions between systems and users in a particular environment and related to a particular goal.

- 1. Actor: An actor is someone or something that interacts with the system. It could be a person, another system, or even a device.
- 2. Use Case: A use case represents a particular functionality or task that the system needs to perform to meet the needs of the actor.
- 3. Description: A description of the steps involved in achieving the specific goal or task outlined in the use case.
- 4. Preconditions: Preconditions are the conditions that must be met before the use case can be executed.
- 5. Postconditions: Postconditions describe the state of the system after the use case has been executed successfully.
- 6. Extensions: Extensions represent alternative paths or scenarios that may occur during the execution of the use case.

BA can use a use case diagram to communicate the system vision and scope to the stakeholders, as well as to provide an overview of the system functionality to the developers and testers. Use case modeling techniques play a pivotal role in the business analysis and a good foundation for requirements prioritisation.

#### Use case specification

Use case specification is a textual description of the details and steps of a use case. It elaborates on the flow of events, the preconditions, the postconditions, the assumptions, the exceptions, and the alternative paths of a use case. A use case

specification can help in document the detailed requirements and logic of a system, as well as the expected outcomes and behaviors. Use case specifications in business analysis serve as detailed descriptions of interactions between users and a system to achieve specific goals.

- 1. Actor: Identify the primary actor initiating the use case. This could be a user or an external system.
- Description: Provide a brief overview of what the use case accomplishes and why it's important.
- 3. Preconditions: List any necessary conditions that must be true before the use case can begin.
- 4. Basic Flow: Outline the main steps the actor takes to accomplish the use case under normal conditions.
- 5. Alternative Flows: Document any deviations or alternative paths that the actor might take during the use case.
- 6. Postconditions: Describe the state of the system after the successful completion of the use case.
- Exceptional Conditions: Identify potential errors or exceptional situations that could occur during the execution of the use case and how they should be handled.
- 8. Frequency: Specify how often this use case is expected to occur.
- 9. Assumptions: Document any assumptions made during the creation of the use case.
- 10. Dependencies: List any other use cases or external factors that this use case depends on.
- 11. Notes: Include any additional information or considerations relevant to the use case.

By following these specifications, business analysts can ensure that use cases are well-defined, understood, and implemented accurately within the system.BA can use a

use case specification to refine and clarify the use case diagram, as well as to provide a basis for the design, development, and testing of the system.

## Activity diagrams

An activity diagram is a type of UML behavioral diagram that describes what needs to happen in a system. Activity diagrams visualize use cases at a more detailed level. Business analysts can use them to illustrate the flow of events in a business process, or the flow activities through a system. They are particularly useful for communicating processes and procedures to stakeholders from both the business and development teams.

Uses of Activity Diagrams in Business Analysis:

- 1. Process Modeling: Helps in understanding and documenting business processes.
- 2. Identifying Bottlenecks: Pinpoints areas where processes might slow down or encounter inefficiencies.
- 3. Communication Tool: Provides a visual representation that can be easily understood by stakeholders.
- 4. Requirements Analysis: Aids in defining requirements by clarifying the sequence of activities and interactions

System Design: Assists in designing software systems or workflows based on business processes.

# **Data modeling**

Generally, data modeling is the process of graphically representing data structures and their relationships within a system or database in a precise form called the data model.

The process may involve the creation of three data models defined at different abstraction levels, namely:

- Conceptual data model this model defines high-level entities or concepts and their relationships in a business, leaving further details about the entities (for example, their attributes or types) for the next steps of modeling. The model is a rather technology-independent specification of the data in the database. The main focus is on what data is being used and how it's related, without including technical details.
- Logical data model this model defines the structure of the data elements and their relationships, regardless of how the data will be stored physically. It's a refined version of the conceptual model and provides a blueprint for the physical database design.
- Physical data model this model represents how the data will be stored in the database. The model incorporates any changes necessary to achieve adequate performance and includes details like data types and indexes. It's the basis for actual database implementation.

There are various data modeling tools and techniques available to business professionals. For example, Entity-Relationship Diagrams (ERDs), Data Flow Diagrams (DFD), Unified Modeling Language (UML) diagrams, and Data Definition Language (DDL) statements.

Finally, data modeling is important for designing and developing databases, software applications, and information systems within an organization.

However, it is data modeling that plays a key role in business analysis in many ways - for instance:

- Data modeling helps business analysts understand and document the data requirements of an organization, as well as gain insights into what kind of data is necessary to support various business processes.
- Data modeling provides a clear and standardized way of illustrating data structures, allowing business analysts to effectively communicate data requirements to different stakeholders.

- Business analysts can use data models to identify gaps in existing data structures and inconsistencies in business rules, hindering the successful implementation of business processes and systems.
- Data models provide a framework for organizing the data that business analysts need to analyze to make informed decisions and provide recommendations to stakeholders.
- Data models help software developers understand the data requirements and design systems that align with the business needs.
- By using data modeling, business analysts can design integrated data structures that facilitate the data exchange between different systems and applications.
- Data models provide business analysts with a structured way to assess how changes in data requirements affect business processes and ensure their continuous alignment with business objectives.

Overall, data modeling is essential for business analysis as it helps understand, document, and communicate <u>complex business processes</u> and data requirements. Without it, business analysts cannot develop solutions that align with business goals and efficiently manage and use data resources.

# Data flow diagrams (DFDs)

Data flow diagrams (DFDs) are powerful tools that allow business analysts to visualize and analyze the data flow within a system. A data flow diagram (DFD) is a graphical representation of the data flow within a system. They visually represent the sequence of actions, decision points, and parallel activities in a business process or workflow. It provides a visual tool for understanding how information moves from one process to another, highlighting the inputs, outputs, and processes involved in the system.

## Entity-relationship diagram

An entity-relationship diagram (ER diagram) illustrates how entities like people, objects, or concepts relate to one another in a system. For example, an ER diagram could show how the terms in an organization's business glossary relate to one another.

ER diagrams comprise three main parts:

- Entities
- Relationships
- Attributes

Attributes apply to the entities, describing further details about the concept. Relationships are where the key insights from ER diagrams arise. In a visual model, the relationships between entities are illustrated either numerically or via crow's foot notation.

These diagrams are most commonly used to model database structures in software engineering and business information systems and are particularly valuable tools for BAs in those fields

In business analysis, an Entity-Relationship (ER) diagram is a valuable tool for visualizing and understanding the relationships between various entities within a system or organization. ER diagrams are particularly useful for:

- Understanding Data Relationships: ER diagrams help business analysts understand how different entities are related to each other in a system or business process.
- Identifying Key Entities: They help in identifying the key entities involved in a business process or system and their attributes.
- Clarifying Business Requirements: ER diagrams can clarify business requirements by providing a graphical representation of the data model, which can be easier for stakeholders to understand.
- Communication Tool: They serve as a communication tool between business analysts and stakeholders, helping to ensure that everyone has a clear understanding of the data model.

 Database Design: ER diagrams often serve as the foundation for database design, helping developers to design databases that accurately reflect the business requirements.

Overall, ER diagrams play a crucial role in business analysis by facilitating communication, understanding data relationships, and aiding in the design of efficient systems and databases.

## Page designs

Page design in business analysis refers to the layout, structure, and presentation of information on documents or reports used for analyzing business processes, data, or requirements. Effective page design in business analysis is crucial for clarity, readability, and conveying complex information in a meaningful way.

Here are some key aspects of page design in business analysis:

- 1. Clarity: Ensure that the layout is clear and easy to follow. Use headings, subheadings, and bullet points to break down information into digestible chunks.
- 2. Consistency: Maintain consistency in fonts, colors, and formatting throughout the document to create a cohesive look and feel.
- 3. Whitespace: Incorporate ample whitespace to avoid clutter and improve readability. White space helps to separate elements and draw attention to important information.
- 4. Visual Elements: Use charts, graphs, diagrams, and tables to illustrate data and concepts. Visual elements can help stakeholders better understand complex information at a glance.

- Hierarchy: Organize information hierarchically, with the most important points or sections prominently featured. Use headings and subheadings to create a logical flow of information.
- 6. Alignment: Ensure that text, images, and other elements are aligned properly for a neat and professional appearance.
- Accessibility: Design documents with accessibility in mind, considering factors such as font size, contrast, and alternative text for images to accommodate diverse audiences.
- 8. Branding: Incorporate company branding elements such as logos and color schemes to maintain brand identity and consistency.

By paying attention to these aspects of page design, business analysts can create documents that effectively communicate insights, findings, and recommendations to stakeholders and decision-makers.

Question 25 - Elicitation Techniques - 3 Marks

As a Business Analyst, What Elicitation Techniques you are aware of? ( BDRFOWJIPQU)

## What Is Elicitation?

Many of the technical or business requirements are not formally documented anywhere. Typically, the requirements exist only in the minds of Subject Matter Experts and stakeholders.

Business analysts, therefore, have to draw out or elicit the requirements to gain access to relevant data. The methodology of elicitation must also be meticulous and logical.

Elicitation is the cornerstone of any project, as it plays a critical role in bringing the requirements for a project to the table. Scientists and engineers agree that elicitation errors are one of the most common causes of project failures and abandonment that negatively impact the bottom line.

To avoid the possibility of fatal mistakes hampering a project, adequate research and preparation are hence necessary for the elicitation process.

Simply put, the goal of a requirements elicitation is to exhaustively identify the assumptions, risks, and needs involved in any project.

# What Is Requirement Elicitation in Business Analysis?

Requirements elicitation is one of the most complex, error-prone,

communication-intensive, and challenging stages of the software development process, as it is pivotal in determining the budget, time estimate, and scope of a project. The clarity of requirements elicitation should be exceptional in order to deliver solutions that end-users find useful and satisfying.

The Business Analysis Body of Knowledge (BABOK) Guide states that the primary responsibility of a Business Analyst is to make the requirements elicitation process complete and clear. Incorporating requirements elicitation into business analysis practices enables Business Analysts to act as a bridge between developers, stakeholders, and end-users, thereby facilitating the seamless development of applications that are responsive to customer requirements.

## **Requirements Elicitation Techniques**

## Brainstorming

The requirements elicitation process begins with brainstorming. To facilitate focused and fruitful brainstorming sessions, business analysts should set up a team with representatives of all stakeholders for capturing new ideas, identify the *root causes* of problems, as well as solve complex business problems. During **requirements gathering**, brainstorming can be used to get a variety of ideas from a group of people and to identify possible solutions to problems and may also be combined with voting to prioritize ideas. Brainstorming can also be used to make requirements clear and is one of the best ways to generate lots of ideas on a particular topic in a short period of time. Suggestions coming out of brainstorming sessions should be properly documented in order to draft the plan of action.

#### **Document Analysis**

During this step of the requirements elicitation process, business analysts review existing documentation at hand, with the intent of identifying requirements for changes or improvements. Examples of document analysis sources include pre-existing project plans, system specifications, process documentation, market research dossiers, customer feedback, meeting minutes, and user manuals.Document analysis can also be effective when stakeholders are not available to supply information during the **requirements gathering** process. Document review can also help during the creation of the as-is process flow diagrams in the business requirements document. Document analysis is performed before scheduling more in-depth requirements elicitation sessions or interviews with stakeholders.

#### **Focus Group**

A focus group involves a gathering of stakeholders who represent the customer and can be used to collect information in a relatively short period of time. In a focus group, multiple viewpoints can be shared and discussed with the assistance of a facilitator. The feedback gathered from a focus group can be used to identify or validate requirements. A focus group can also be used as a way of identifying the stakeholder's attitudes and beliefs about the solution.

#### Interviews

A great way to extract critical data is via interviews. Business analysts engage in group or one-to-one interviews in an informal or formal setting to elicit project requirements through questions directed at Subject Matter Experts, stakeholders, and end-users. By exploring diverse opinions, business analysts gain in-depth knowledge of the requirements. Business analysts can use elicitation techniques, like either structured or unstructured interviews, depending on the situation. A structured interview uses preset questions, which are asked to stakeholders, and an unstructured interview uses spontaneous questions, which are not determined in advance. Interviews offer a business analyst an opportunity to establish rapport with the interviewee and get instant feedback.

#### Observation

Also referred to as job shadowing, observation is an excellent elicitation technique that helps understand requirements based on observations related to process flows and work environments of stakeholders. Practical insights into actual workflows serve as the basis for modifications and enhancements. Observations can be used effectively with other techniques such as interviewing and surveys to help gather and validate requirements. In passive observation, business analysts do not interact with the stakeholders during the observation process, while in active observation, the business analyst can interact with the stakeholders and ask questions or even participate in the activities. The observation approach allows business analysts to elicit real-world data that other requirements elicitation methods cannot capture.

## Prototyping

One of the most important phases of the requirements elicitation process, prototyping enables business owners and end-users to visualize realistic models of applications before they are finally developed. Prototyping helps generate early feedback, and it boosts stakeholder participation in requirements elicitation. The prototype can be shown to the *stakeholders, who will review and give recommendations for improvement so as to meet business* requirements. Prototypes are very effective, particularly where the solution, involves the implementation of new technology and can help stakeholders visualize what the final product will look like.

#### Workshops

For multi-stakeholder, complex projects, workshops are one of the most resource-efficient methods to elicit requirements. Intense, focused, and highly productive workshops have a key role to play in getting all parties onto the same page. During a requirements workshop, a facilitator will play a leading role by presenting the topics to be discussed as well as coming up with documentation. Workshop events help Subject Matter Experts and Stakeholders to collaborate, resolve conflicts, and come to an agreement.

#### Joint Application Development (JAD)

Joint Application Development (JAD) is a requirements elicitation technique that brings together stakeholders, end-users, and SMEs to collaboratively identify and define system requirements. It is a structured workshop-based approach that aims to improve the quality and accuracy of requirements by involving key stakeholders in the process. The business analyst will act as the JAD facilitator. JAD is an effective requirement elicitation technique because it brings together stakeholders and subject matter experts to collaborate and develop a shared understanding of the system requirements.

#### Survey

When multiple Subject Matter Experts and stakeholders are involved in a project, business analysts conduct a survey for the elicitation of requirements. A survey is a data-gathering method that is used to collect, analyze, and interpret the views of a group of people from a target population. Everyone involved is given a questionnaire to fill out. Subsequently, the responses are analyzed to refine the requirements. Surveys are less expensive than other requirements elicitation techniques, easy to administer, and can produce both qualitative and quantitative results.

#### **Reverse engineering**

This elicitation technique is generally used in migration projects. If an existing system has outdated documentation, it can be reverse engineered to understand what the system does. This is an elicitation technique that can extract implemented requirements from the system.

Question 26 – This project Elicitation Techniques - 1 Marks

Which Elicitation Techniques can be used in this Project and Justify your selection of Elicitation Techniques?

As a BA I select Prototyping and Brainstorming.Because during a brainstorming session, the participants are encouraged to share their ideas. It is a way to think outside the box and to get people thinking about ideas and solutions that might not come to mind in a more formal elicitation session. After the initial requirements gathering gets over, the prototyping technique is applied in the final phase to refine the stakeholder's requirements. Prototypes help the development team with a clear

understanding of the vague requirements. Since prototypes are the model of the end product, it actually helps end-users to feel how will their product look in real-time.

#### Question 27 – 10 Business Requirements- 5 Marks

Make suitable Assumptions and identify at least 10 Business Requirements.

| Req Name                         | Req description  |
|----------------------------------|--|
| Farmar search for product        | Farmer should be able to search for products seeds fertilizer pesticides           |
| Manufacture upload their product | Manufacture should be able to upload and display their products in the application |
| Farmer buy /return product       | Customer friendly options and policies   |
| Manufacture sell products        | Should show how many products are left   |
| Farmer account                   | Should have history of purchase tracking options                                   |
| Catalogue                        | Should be categorized for easy search  |
| Filter                           | Should have option to optimize the product   |
| Offers                           | Should show discount coupons   |
| Date                             | Expiry date of the product should be mentioned                                     |
| Register                         | Farmer should be able to register with email id or phone number                    |
| Application                      | Application should be beginner and user friendly                                   |
| Payment                          | Application should have all types of payment modes                                 |

#### Question 28 – Assumptions- 2 Marks

List your assumptions

Farmer will have access to network and smartphones

Farmer will be aware of online agriculture shopping application

Farmers will utilize the user friendly application over physical agriculture store

All Manufacturing companies will up display their products

Shopping experience will be smooth and easy for the buyers

All the searching products will be available to the farmers

Payment modes are suitable for all type of farmers

Farmers will have good shopping experience and will receive the product on time

The product will reach in good condition if not return the product will be easy for farmers

Shipping will be available for all the farmer places

Question 29 – This project Requirements Priority - 1 Marks

Give Priority 1 to 10 numbers (1 being low priority – 10 being high priority) to these Requirements after discussions with the stakeholders.

| Req ID | Req Name          | Req description   | Priority |
|--------|-------------------|---|----------|
|        | Farmar search for | Farmer should be able to search for products seeds fertilizer |          |
| BR001  | product           | pesticides  | 8        |

| BR002 | Manufacture upload their product | Manufacture should be able to upload and display their products in the application | 8 |
|-------|----------------------------------|--|---|
| BR003 | Farmer buy /return<br>product    | Customer friendly options and policies   | 7 |
| BR004 | Manufacture sell<br>products     | Should show how many products are left   | 6 |
| BR005 | Farmer account                   | Should have history of purchase tracking options                                   | 6 |
| BR006 | Catalogue                        | Should be categorized for easy search  | 8 |
| BR007 | Filter                           | Should have option to optimize the product   | 7 |
| BR008 | Offers                           | Should show discount coupons   | 6 |
| BR009 | Date                             | Expiry date of the product should be mentioned                                     | 7 |
| BR010 | Register                         | Farmer should be able to register with email id or phone number                    | 9 |
| BR011 | Application                      | Application should be beginner and user friendly                                   | 9 |
| BR012 | Payment                          | Application should have all types of payment modes                                 | 9 |

Question 30 – Use Case Diagram - 3 Marks

Draw use case diagram



# Question 31 – (minimum 5) Use Case Specs - 3 Marks

#### Prepare use case specs for all use cases

| Actor                                     | Customer  |  |
|---|---|--|
| Descripti<br>on                           | Customer can be able to login into the site                                 |  |
| Precondi<br>tion                          | Customer must have user id  |  |
| Post<br>condition                         | Customer logged into the site   |  |
| Trigger                                   | Customer wants to register  |  |
| Primary<br>flow                           | Customer trying to login with registered user id and successfully logged in |  |
| Alternati<br>ve flow                      | System show invalid id and prompts the customer to relogin                  |  |
| Actor action                              | on  | System response                        |
| Customer                                  | open site   | System display login page              |
| Customer types user id and password passw |   | System verify the user id and password |
| Customer                                  | Customer click the login System show the homepage                           |  |
| Customer directed to home page            |   |  |

| Actor            | Customer                                   |
|------------------|--|
| Descripti<br>on  | Customer can be able to search for product |
| Precondi<br>tion | Customer must be logged in                 |
| Post<br>condition                          | Customer add the product to cart                 |   |  |
|--|--|---|--|
| Trigger                                    | Customer wanted to buy product                   |   |  |
| Primary<br>flow                            | Customer successful searched the desired product |   |  |
| Alternati<br>ve flow                       | Iternati<br>e flow None                          |   |  |
| Actor action                               |  | System response                           |  |
| Customer click the search tab              |  | System show search tab                    |  |
| Customer                                   | enter the product                                | System verify the product                 |  |
| Customer see the product and other options |  | System show the product and other options |  |
| Customer click the product                 |  | System verify and process the action      |  |
| Customer add the product to cart           |  | System show the product in cart           |  |

| Actor  | Customer   |                                    |  |
|--|--|------------------------------------|--|
| Descripti<br>on                                | Customer buy product                               |                                    |  |
| Precondi<br>tion                               | Customer must have product in the cart             |                                    |  |
| Post<br>condition                              | Customer successfully bought the products          |                                    |  |
| Trigger  | Customer wants to buy product                      |                                    |  |
| Primary<br>flow                                | Customer bought the product from the cart          |                                    |  |
| Alternati<br>ve flow                           | If the product is out of stock display the message |                                    |  |
| Actor acti                                     | on   | System response                    |  |
| Customer                                       | click the cart                                     | System show the cart               |  |
| Customer select the products                   |  | System show product and process it |  |
| Customer click buy                             |  | System show buy option             |  |
| Customer proceed to pay System show pay option |  | System show pay option             |  |

| Actor                            | Customer  | Customer                              |  |  |
|----------------------------------|---|---------------------------------------|--|--|
| Descripti<br>on                  | Customer pay for product                              |                                       |  |  |
| Precondi<br>tion                 | Customer must have clicked the buy option             |                                       |  |  |
| Post<br>condition                | Customer successfully finished payment                |                                       |  |  |
| Trigger                          | Customer want to pay for product                      |                                       |  |  |
| Primary<br>flow                  | Customers pay for the product                         |                                       |  |  |
| Alternati<br>ve flow             | Customer redirect to cart again and show message paym | nent failed                           |  |  |
| Actor acti                       | on  | System response                       |  |  |
| Customer click buy option        |   | System show buy option and process it |  |  |
| Customer select the payment mode |   | System show payment modes to select   |  |  |
| Customer enter card details      |   | System show the enter card details    |  |  |
| Customer                         | click proceed to pay                                  | System veriy the card details         |  |  |
| Customer enter otp               |   | System show enter otp                 |  |  |

| Actor                | Customer   |
|----------------------|--|
| Descripti<br>on      | Customer edit the cart                               |
| Precondi<br>tion     | Customer must have products in cart                  |
| Post<br>condition    | Customer edited the cart                             |
| Trigger              | Customer wants to remove few product from the cart   |
| Primary<br>flow      | Customer edit the cart successfully by removing item |
| Alternati<br>ve flow | Customer see the message error and redirect to cart  |

| Actor action                 | System response                      |
|------------------------------|--------------------------------------|
| Customer click the cart      | System show cart                     |
| Customer select the product  | System process and show product      |
| Customer click remove option | System verify and process the action |
| Customer removed the product | System update the cart               |

Question 32 – (minimum 5) Activity Diagrams - 3 Marks

Activity diagrams

Browse, Payment, Register, Search, Update cart











# Question 33– Functional Requirements - 7 Marks

Identify minimum 20 functional requirements.

| Req ID | Req Name                       | Req description  | Priority |  |
|--------|--------------------------------|--|----------|--|
| FR0001 | Farmer<br>registration         | Farmer should be able to register in the application                     | 8        |  |
| FR0002 | Farmer login                   | Farmer should be able to login with user id and password                 | 9        |  |
| FR0003 | Farmar search for<br>product   | Farmer should be able to search for products seeds fertilizer pesticides | 9        |  |
| FR0004 | Farmer add the product to cart | Farmer should be able to add the searched product to cart                | 8        |  |
| FR0005 | Farmer view /edit<br>cart      | Farmer should be able to view/edit the product from the cart             | 6        |  |
| FR0006 | Farmer buy<br>product          | Farmer should be able to buy the products from cart                      | 8        |  |

| FR0007 | Farmer proceed to pay                | Farmer should be able to use the option proceed to pay                          | 7 |
|--------|--------------------------------------|---|---|
| FR0008 | Farmer select the credit card option | Farmer should be able to select credit card option out of other payment modes   | 8 |
| FR0009 | Farmer enter card details            | Farmer should be able to enter the card details such as cvv<br>and card numbers | 8 |
| FR0010 | Farmer enter otp                     | Farmer should be able to the otp number in the application                      | 9 |
| FR0011 | Farmer paid the product              | Farmer should be able to pay the product  | 8 |
| FR0012 | Farmer gives<br>address              | Farmer should be able to give address and phone number details                  | 7 |
| FR0013 | Farmer order<br>confirmed            | Farmer should be able to get notification of order confirmation                 | 7 |
| FR0014 | Farmer track order                   | Farmer should be able to track order through application option                 | 6 |
| FR0015 | Farmer cancel<br>order               | Farmer should be able to have cancel the order options                          | 7 |
| FR0016 | Farmer return the product            | Farmer should be able to return the product through the application option      | 8 |

| FR0017  | Farmer add<br>product to<br>favourite | Farmer should be able to add the desired product in favourite option      | 6 |
|---------|---------------------------------------|---|---|
| FR0018  | Farmer use filter                     | Farmer should be able to use filter option to search products in category | 6 |
| FR0019  | Farmer review product                 | Farmer should be able to review and rate the product                      | 5 |
| FR0020  | Farmer raise<br>complaint             | Farmer should be able to raise complaint regarding services product       | 7 |
|         |                                       |   |   |
|         |                                       |   |   |
|         |                                       |   |   |
| NFR0101 | Page loading time                     | The system should load pages within 3 seconds on average.                 | 8 |
| NFR0102 | WCAG2.1                               | The system must meet web content accessibility guideline WCAG2.1          | 9 |
| NFR0103 | Database query                        | Response time for database queries should be under 200 milliseconds.      | 9 |

| NFR0104 | Time for failure          | The system should have a mean time between failures (MTBF) of at least 10,000 hours. | 8 |
|---------|---------------------------|--|---|
| NFR0105 | Error rate                | Data integrity should be maintained with a maximum error rate of 0.01%.              | 6 |
| NFR0106 | Concurrent<br>access      | The system should support concurrent access by at least 1000 users.                  | 8 |
| NFR0107 | Handle traffic            | It should be able to handle a 50% increase in traffic during peak times.             | 7 |
| NFR0108 | Password                  | User passwords must be stored using salted hashing algorithms.                       | 8 |
| NFR0109 | User roles and permission | Access to sensitive data should be restricted based on user roles and permissions.   | 8 |
| NFR0110 | Guidelines                | The interface should follow WCAG 2.1 accessibility guidelines.                       | 9 |
| NFR0111 | Error message             | Error messages should be clear and actionable for users.                             | 8 |
| NFR0112 | Unit test                 | Code should be well-documented with at least 80% code coverage for unit tests.       | 7 |
| NFR0113 | Update support            | The system should support seamless updates without significant downtime.             | 7 |

| NFR0114 | Operating system         | The application should be compatible with major operating systems: Windows, macOS, and Linux.            | 6 |
|---------|--------------------------|--|---|
| NFR0115 | Cloud platform           | It should be deployable on cloud platforms like AWS, Azure, and Google Cloud.                            | 7 |
| NFR0116 | Available time           | The system should be available 99.99% of the time, excluding scheduled maintenance.                      | 8 |
| NFR0117 | Continuous<br>service    | Failover mechanisms should ensure continuous service in case of server failures.                         | 6 |
| NFR0118 | Protocol                 | The system should be able to integrate with third-party APIs using standard protocols like REST or SOAP. | 6 |
| NFR0119 | Industrial standard      | Data exchange formats should be compatible with industry standards such as JSON or XML.                  | 5 |
| NFR0120 | User data<br>regulations | The system must comply with GDPR regulations for handling user data.                                     | 7 |
|         |                          |  |   |

Make wireframe and prototypes.

Homepage



Payment

| ♦ ♥ ★ ✿ ₪   | p://www.farmerfriend | welcome to farmer friend | d       |          | $\cap$ |
|---|----------------------|--------------------------|---------|----------|--------|
| select payment mode<br>card number<br>cvv<br>other payment mode |                      | total 380                | pay now | continue |        |
| Credit/debit carc<br>VISA<br>net banking<br>upi<br>COD          | select bank          |                          |         |          |        |
|   |                      |                          |         |          | 11     |

Login

| welcome to farmerfriend   |
|---|
| FormerFriend     User ID*   Password*   Remember me   forgot password?     Register   Login   privacy policy   terms and condition   about us |
|   |

# Search



Cart

|               | <u>^</u> | 1  | welcome to framer frie | nd  |        |     |                 |
|---------------|----------|--|------------------------|-----|--------|-----|-----------------|
|               | http://  | /www.farmerfriend.com  |                        |     |        |     |                 |
| cart buy agai | 'n       |  | proceed to buy 3 ite   | ems |        |     |                 |
| ATTRODE I     | 🗌 select | solution fertilizer for plants<br>price-180<br>in stock<br>eligibile for free shipping |                        | 1.  | delete | buy | add to favorite |
|               | 🗌 select | sevin pesticide for plants<br>price-150<br>in stock<br>eligibile for free shipping     |                        | 1 - | delete | buy | add to favorite |
|               | Select   | sunflower seeds by growth<br>price-50<br>in stock<br>eligibile for free shipping       |                        | 1 - | delete | buy | add to favorite |
|               |          |  |                        |     |        |     | "               |

Login

|         | <b>Farmer F</b>                | i<br>i<br>i<br>i | nd       |       |
|---------|--------------------------------|------------------|----------|-------|
|         | User ID                        |                  |          |       |
|         | Password                       |                  |          |       |
|         | forgot password?<br>Learn more |                  | register |       |
| ENGLISH | •                              | help             | privacy  | terms |

Cart



Payment

| 0    | Credit card payment |
|------|---------------------|
|      | Credit card details |
|      | card number         |
|      | CW                  |
|      | expiry date         |
| othe | payment mode        |
| 0    | Net Banking         |
| 0    | UPI                 |
| 0    | COD                 |

# Register

| Crea         | ite account    |
|--------------|----------------|
| Name         |                |
| DOB          |                |
| Address      |                |
| Phone number |                |
| Email id     |                |
| City         |                |
| State        |                |
| Postal code  |                |
|              | Create Account |

Tract order

|             | Arriving tomorrow                         |
|-------------|---|
|             | Ordered Monday May 20                     |
|             | Shipped Tuesday May 21<br>see all updates |
|             | Out for delivery                          |
|             | Arriving Friday                           |
| Deliv       | very by Farmer Friend                     |
| Trac        | king ld 25674256891                       |
| Add         | ress info                                 |
| Ram<br>Tami | nraj 52 NR Street Trichy<br>ilnadu        |
|             |   |
|             |   |

Question 35 - Tools (Visio, Balsamiq) - 3 Marks

Make a note of the Tools, which you are using for above concepts.

What is Visio?

Visio is a Microsoft Windows based diagramming software that includes templates and symbols allowing users to create flowcharts, organizational charts, floor plans, network diagrams, mind maps, infographics and more. Visio is part of the Microsoft Office software suite, although it is sold as a stand-alone program.

Visio was first released by the Visio Corporation (known then as the Shapeware Corp.) in 1992 and acquired by Microsoft in 2000. Visio is primarily sold as downloadable software, but released an online version in 2017.

## Visio Diagram Types

There are several different types of diagrams you can make using Microsoft Visio. Below are some of the more popular uses for Visio.

## Flowcharts

Flowcharts show a visual sequence of steps and decisions for a process, generally using shapes to show the steps and arrows to show the progression from one step to another. Flowchart is a generic term, and can also include process flows, process maps, work flows and flow diagrams

## **Organizational Charts**

Organizational charts, or org charts, show the reporting relationships and hierarchies within an organization. They can show who reports to who, as well as the overall hierarchy from top to bottom to help with planning and management. Organizational charts are also known as hierarchy charts, structure charts and organograms.

### **Floor Plans**

Floor plans are scaled drawings that show the footprint or cross section of a building or other structure. They are used to ensure proper sizing as well as the location of rooms

and other items, like furniture, relative to one another. Floor plans are also called house plans, blueprints, architectural plans, building plans and schematics.

#### **Mind Maps**

Mind maps are diagrams that show the connection between ideas by grouping and connecting related ideas to the overall topic(s) at hand. Mind maps make for effective planning and brainstorming tools. Mind maps are also known as concept maps.

#### **Charts & Graphs**

A staple of Excel, but also included in Visio, charts and graphs are seen in almost every business presentation. They are used to represent data visually in a way that makes the information being presented easier to understand. Common examples include bar charts, line charts and pie charts.

#### **Gantt Charts**

A common diagram in project management and planning is a Gantt chart. Gantt charts show individual tasks in a project, their start and end dates, the people assigned to the tasks as well as other information relevant to the project. While Microsoft also develops Project, a dedicated project planning software, Visio still includes rudimentary project planning templates as well.

#### **Network Diagrams**

Network diagrams use symbols and lines to show the structure, nodes and connections for a location's computer network. Network diagrams are useful for understanding which nodes are a part of which network, but can also be useful in understanding how computer data flows through an organization.

# What is Balsamiq?

Balsamiq is a rapid wireframing tool. It creates mockups and wireframes for websites, web apps, and desktop software. It allows to picture ideas and concepts through a simple drag-and-drop interface. The wireframes created using Balsamiq have a hand-drawn style. It focuses on the structure and content of the product rather than visual details.

The main goal of Balsamiq is to facilitate effective communication between teams about user interface design. It encourages discussion and feedback on early designs before developers start coding the product. Balsamiq simplifies the process of turning ideas and concepts into concrete wireframes that represent the page structure, layouts, and interface elements.

# What is Balsamiq Used For?

web, mobile, and desktop applications. The wireframes and mockups created in Balsamiq have a hand-drawn style.

## They focus primarily on:

• Layout and structure

Balsamiq defines the overall layout of pages, including the placement of navigation menus, content, images, etc.

• Content

You can choose the headlines and broad content categories. The actual content is not defined using it.

• Interface elements

Balsamiq lets you add interface elements like buttons, form fields, icons, etc. But the elements have a hand-drawn style.

• Responsive design

Wireframes can be designed for various responsive breakpoints including mobile, tablet, desktop, etc.

• Annotations and specifications

Additional notes and specs can be added to the wireframes.

• Linking

Wireframes can create a sitemap and flow between screens.

Question 36 - RTM - 2 Marks

A business analyst's key responsibilities are to keep track of the requirements and make sure that no requirement is missed.

Mr. Henry and peter have approached you regarding the current status of the project. How will you tackle this situation?

Prepare RTM

#### **Requirement traceability matrix**

RTM (Requirements Traceability Matrix) is a document that tracks and links project requirements to their corresponding test cases, ensuring that all requirements are covered and validated.

| Req ID | Req Name | Req description | Design | D1 | T1 | D2 | T2 | D3 | Т3 | D4 | T4 | UAT |
|--------|----------|-----------------|--------|----|----|----|----|----|----|----|----|-----|
|--------|----------|-----------------|--------|----|----|----|----|----|----|----|----|-----|

| FR0001 | Farmer registration                        | Farmer should be able to register in the application                                | pass        | pen<br>ding | pendi<br>ng | pen<br>ding | pend<br>ing | fail        | pendi<br>ng | fail        | pendi<br>ng | pend<br>ing |
|--------|--|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| FR0002 | Farmer login                               | Farmer should be able to login with user id and password                            | pass        | fail        | pendi<br>ng | pen<br>ding | pend<br>ing | fail        | pendi<br>ng | pend<br>ing | pendi<br>ng | pend<br>ing |
| FR0003 | Farmar<br>search for<br>product            | Farmer should be able to search<br>for products seeds fertilizer<br>pesticides      | pass        | pen<br>ding | pass        | pen<br>ding | pass        | pass        | pendi<br>ng | pend<br>ing | pass        | pend<br>ing |
| FR0004 | Farmer add<br>the product to<br>cart       | Farmer should be able to add the searched product to cart                           | pass        | fail        | pass        | pen<br>ding | pass        | pend<br>ing | pass        | pass        | pass        | pass        |
| FR0005 | Farmer view<br>/edit cart                  | Farmer should be able to view/edit the product from the cart                        | pendin<br>g | pen<br>ding | pass        | pen<br>ding | pass        | pend<br>ing | pass        | pend<br>ing | pendi<br>ng | pass        |
| FR0006 | Farmer buy<br>product                      | Farmer should be able to buy the products from cart                                 | fail        | pen<br>ding | pendi<br>ng | fail        | pass        | fail        | pass        | fail        | pendi<br>ng | pass        |
| FR0007 | Farmer<br>proceed to<br>pay                | Farmer should be able to use the option proceed to pay                              | pendin<br>g | pass        | pendi<br>ng | pen<br>ding | pass        | pend<br>ing | pendi<br>ng | pend<br>ing | fail        | pass        |
| FR0008 | Farmer select<br>the credit<br>card option | Farmer should be able to select<br>credit card option out of other<br>payment modes | pass        | pen<br>ding | pass        | fail        | pend<br>ing | pend<br>ing | pendi<br>ng | pass        | fail        | pass        |

| FR0009 | Farmer enter card details             | Farmer should be able to enter<br>the card details such as cvv and<br>card numbers | pendin<br>g | pen<br>ding | pendi<br>ng | pen<br>ding | pend<br>ing | pass        | pendi<br>ng | pass        | fail        | pend<br>ing |
|--------|---------------------------------------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| FR0010 | Farmer enter<br>otp                   | Farmer should be able to the otp number in the application                         | pendin<br>g | pen<br>ding | pendi<br>ng | pas<br>s    | pend<br>ing | pass        | fail        | pass        | pass        | pend<br>ing |
| FR0011 | Farmer paid<br>the product            | Farmer should be able to pay the product   | pendin<br>g | pass        | pendi<br>ng | pas<br>s    | fail        | pass        | pendi<br>ng | pend<br>ing | pass        | pass        |
| FR0012 | Farmer gives<br>address               | Farmer should be able to give<br>address and phone number<br>details               | fail        | pass        | fail        | pas<br>s    | pend<br>ing | pend<br>ing | pendi<br>ng | pend<br>ing | pass        | pend<br>ing |
| FR0013 | Farmer order confirmed                | Farmer should be able to get notification of order confirmation                    | pendin<br>g | pass        | pendi<br>ng | pen<br>ding | pend<br>ing | pend<br>ing | pass        | pend<br>ing | pass        | fail        |
| FR0014 | Farmer track<br>order                 | Farmer should be able to track order through application option                    | pendin<br>g | pen<br>ding | pendi<br>ng | pen<br>ding | pass        | fail        | pass        | fail        | pass        | pend<br>ing |
| FR0015 | Farmer<br>cancel order                | Farmer should be able to have cancel the order options                             | pendin<br>g | pen<br>ding | pass        | pen<br>ding | pass        | pend<br>ing | pass        | pass        | pendi<br>ng | pass        |
| FR0016 | Farmer return the product             | Farmer should be able to return<br>the product through the<br>application option   | pass        | pen<br>ding | pass        | fail        | pass        | fail        | pendi<br>ng | pend<br>ing | pendi<br>ng | pass        |
| FR0017 | Farmer add<br>product to<br>favourite | Farmer should be able to add<br>the desired product in favourite<br>option         | pass        | fail        | pass        | pen<br>ding | pass        | pass        | pendi<br>ng | pend<br>ing | pass        | pass        |

| FR0018  | Farmer use<br>filter        | Farmer should be able to use filter option to search products in category  | pass        | fail        | fail        | pas<br>s    | pass        | pass        | pendi<br>ng | pass        | fail        | pass        |
|---------|-----------------------------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| FR0019  | Farmer<br>review<br>product | Farmer should be able to review and rate the product                       | pass        | pass        | fail        | pas<br>s    | fail        | pass        | fail        | pass        | fail        | fail        |
| FR0020  | Farmer raise<br>complaint   | Farmer should be able to raise complaint regarding services product        | pass        | pass        | pass        | pas<br>s    | pass        | pass        | pass        | fail        | fail        | pass        |
|         |                             |  |             |             |             |             |             |             |             |             |             |             |
|         |                             |  |             |             |             |             |             |             |             |             |             |             |
|         |                             |  |             |             |             |             |             |             |             |             |             |             |
| NFR0101 | Page loading<br>time        | The system should load pages within 3 seconds on average.                  | fail        | fail        | pass        | pas<br>s    | pend<br>ing | pend<br>ing | pass        | pend<br>ing | pass        | pend<br>ing |
| NFR0102 | WCAG2.1                     | The system must meet web<br>content accessibility guideline<br>WCAG2.1     | pendin<br>g | pass        | fail        | pen<br>ding | fail        | fail        | pass        | pend<br>ing | pendi<br>ng | pend<br>ing |
| NFR0103 | Database<br>query           | Response time for database<br>queries should be under 200<br>milliseconds. | pendin<br>g | pen<br>ding | pendi<br>ng | pen<br>ding | fail        | pass        | pendi<br>ng | pend<br>ing | pass        | fail        |

| NFR0104 | Time for<br>failure             | The system should have a mean<br>time between failures (MTBF) of<br>at least 10,000 hours. | pass        | pen<br>ding | fail        | pas<br>s    | pass        | fail        | pendi<br>ng | pend<br>ing | pendi<br>ng | pass        |
|---------|---------------------------------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| NFR0105 | Error rate                      | Data integrity should be maintained with a maximum error rate of 0.01%.                    | pass        | pen<br>ding | pendi<br>ng | pen<br>ding | pass        | pend<br>ing | fail        | pass        | fail        | pend<br>ing |
| NFR0106 | Concurrent<br>access            | The system should support concurrent access by at least 1000 users.                        | pass        | pass        | pass        | fail        | pass        | pass        | pendi<br>ng | pend<br>ing | pendi<br>ng | fail        |
| NFR0107 | Handle traffic                  | It should be able to handle a<br>50% increase in traffic during<br>peak times.             | pendin<br>g | pen<br>ding | pass        | pen<br>ding | pass        | fail        | pass        | fail        | pendi<br>ng | pass        |
| NFR0108 | Password                        | User passwords must be stored using salted hashing algorithms.                             | pendin<br>g | pen<br>ding | pass        | fail        | pend<br>ing | pend<br>ing | pass        | pend<br>ing | pass        | pass        |
| NFR0109 | User roles<br>and<br>permission | Access to sensitive data should<br>be restricted based on user<br>roles and permissions.   | fail        | pen<br>ding | pendi<br>ng | pen<br>ding | pend<br>ing | pend<br>ing | pass        | pend<br>ing | pass        | pass        |
| NFR0110 | Guidelines                      | The interface should follow<br>WCAG 2.1 accessibility<br>guidelines.                       | pendin<br>g | pass        | fail        | pas<br>s    | fail        | pass        | pendi<br>ng | pass        | pass        | pend<br>ing |
| NFR0111 | Error<br>message                | Error messages should be clear and actionable for users.                                   | pendin<br>g | pass        | pendi<br>ng | pas<br>s    | pend<br>ing | pass        | pendi<br>ng | pend<br>ing | pass        | fail        |

| NFR0112 | Unit test             | Code should be<br>well-documented with at least<br>80% code coverage for unit<br>tests.                           | pass        | pass        | pass        | pas<br>s    | fail        | pass        | fail        | pend<br>ing | pass        | pend<br>ing |
|---------|-----------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| NFR0113 | Update<br>support     | The system should support seamless updates without significant downtime.  | pendin<br>g | pass        | pendi<br>ng | pen<br>ding | pend<br>ing | pend<br>ing | pendi<br>ng | pass        | pass        | pass        |
| NFR0114 | Operating<br>system   | The application should be<br>compatible with major operating<br>systems: Windows, macOS, and<br>Linux.            | fail        | pen<br>ding | fail        | fail        | pend<br>ing | fail        | pendi<br>ng | pass        | pendi<br>ng | pend<br>ing |
| NFR0115 | Cloud<br>platform     | It should be deployable on cloud<br>platforms like AWS, Azure, and<br>Google Cloud.                               | pendin<br>g | pen<br>ding | pendi<br>ng | pen<br>ding | pass        | pend<br>ing | pass        | pass        | pendi<br>ng | fail        |
| NFR0116 | Available time        | The system should be available<br>99.99% of the time, excluding<br>scheduled maintenance.                         | pass        | pen<br>ding | pass        | pen<br>ding | pass        | fail        | pendi<br>ng | pend<br>ing | pass        | pend<br>ing |
| NFR0117 | Continuous<br>service | Failover mechanisms should<br>ensure continuous service in<br>case of server failures.                            | pass        | pen<br>ding | fail        | pas<br>s    | pass        | pass        | pass        | pend<br>ing | fail        | pend<br>ing |
| NFR0118 | Protocol              | The system should be able to<br>integrate with third-party APIs<br>using standard protocols like<br>REST or SOAP. | pass        | fail        | pass        | fail        | pass        | fail        | fail        | pass        | pendi<br>ng | pass        |

| NFR0119 | Industrial<br>standard   | Data exchange formats should<br>be compatible with industry<br>standards such as JSON or<br>XML. | pendin<br>g | pen<br>ding | pass | fail        | pass        | fail        | fail        | pass | pendi<br>ng | pass |
|---------|--------------------------|--|-------------|-------------|------|-------------|-------------|-------------|-------------|------|-------------|------|
| NFR0120 | User data<br>regulations | The system must comply with GDPR regulations for handling user data.                             | pendin<br>g | fail        | pass | pen<br>ding | pend<br>ing | pend<br>ing | pendi<br>ng | fail | pass        | fail |
|         |                          |  |             |             |      |             |             |             |             |      |             |      |

## Question 37 - 10 Test Case Documents - 3 Marks

# Prepare 10 Test Case Documents

A Test Case Document is a structured document that outlines test scenarios, conditions, inputs, expected outputs, and steps to verify that a system or application meets its requirements

| PROJECT NAME     | Online a | Online agriculture store |            |      |  |           |      |    |      |   |        |        |
|------------------|----------|--------------------------|------------|------|--|-----------|------|----|------|---|--------|--------|
| MODULE NAME      | Login    |                          |            |      |  |           |      |    |      |   |        |        |
| CREATED BY       | Monisha  | Monisha Moudivender      |            |      |  |           |      |    |      |   |        |        |
| TEST CASE ID     | TG_LO    | TG_LOGIN_001             |            |      |  |           |      |    |      |   |        |        |
| TEST PRIORITY    | High     | High                     |            |      |  |           |      |    |      |   |        |        |
| DATE OF CREATION | 2/2/202  |                          |            |      |  |           |      |    |      |   |        |        |
| DATE OF REVIEW   | 2/2/2023 |                          |            |      |  |           |      |    |      |   |        |        |
|                  |          |                          |            |      |  |           |      |    |      |   |        |        |
| TEST SENEARIO    | TESTO    | ASE                      | PRE-CONDIT | TEST |  | EXP<br>ED |      | AC | TUAL | P |        | οτάτιο |
| TEST SENEARIO    | TEST C   | ASE                      | ION        | STEP |  | RES       | SULT | RE | SULT | D | DITION | STATUS |

| Verify login of application | enter the valid<br>user name and<br>password | need a valid<br>account to<br>login | enter user<br>name,pass<br>word | successfu<br>I login | sucessfull<br>login                                 | site home<br>page shown | pass |
|-----------------------------|--|-------------------------------------|---------------------------------|----------------------|---|-------------------------|------|
| Verify login of application | enter the valid<br>user name and<br>password | need a valid<br>account to<br>login | enter user<br>name,pass<br>word | successfu<br>I login | the user id<br>and<br>password<br>does not<br>match | Login page<br>shown     | fail |

| PROJECT NAME     | Online agriculture store |
|------------------|--------------------------|
| MODULE NAME      | Registration             |
| CREATED BY       | Monisha Moudivender      |
| TEST CASE ID     | TG_REGISTRATION_002      |
| TEST PRIORITY    | High                     |
| DATE OF CREATION | 2/2/2023                 |
| DATE OF REVIEW   | 2/2/2023                 |

| TEST SENEARIO                | TEST CASE  | PRE-CONDITION                       | TEST STEP                          | EXPECTED<br>RESULT             | ACTUAL<br>RESULT                   | POST-CONDITION                                       | STATUS |
|------------------------------|--|-------------------------------------|------------------------------------|--------------------------------|------------------------------------|--|--------|
| Verify customer registration | Fill<br>registration<br>form with<br>valid details | Need phone<br>number or<br>email id | Enter all<br>details and<br>submit | Registratio<br>n<br>successful | Registr<br>ation<br>succes<br>sful | Site saves customer<br>details and show home<br>page | Pass   |
| Verify customer registration | Fill<br>registration<br>form with<br>valid details | Need phone<br>number or<br>email id | Enter all<br>details and<br>submit | Registratio<br>n<br>successful | Registr<br>ation<br>failed         | Login page shown                                     | Fail   |

| PROJECT NAME     | Online agriculture store |
|------------------|--------------------------|
| MODULE NAME      | Payment                  |
| CREATED BY       | Monisha Moudivender      |
| TEST CASE ID     | TG_PAYMENT_003           |
| TEST PRIORITY    | High                     |
| DATE OF CREATION | 2/2/2023                 |
| DATE OF REVIEW   | 2/2/2023                 |

| TEST<br>SENEARI<br>O         | TEST<br>CASE                           | PRE-CONDITI<br>ON      | TEST<br>STEP                                  | EXPEC<br>TED<br>RESUL<br>T    | ACTUA<br>L<br>RESUL<br>T      | POST-<br>CONDI<br>TION             | STATUS |
|------------------------------|--|------------------------|---|-------------------------------|-------------------------------|------------------------------------|--------|
| Verify<br>payment<br>details | Proceed to<br>check out<br>the product | Need a product in cart | Enter<br>paymen<br>t details<br>and<br>submit | Payme<br>nt<br>succes<br>sful | Payme<br>nt<br>succes<br>sful | Product<br>shippin<br>g<br>details | Pass   |
| Verify<br>payment<br>details | Proceed to<br>check out<br>the product | Need a product in cart | Enter<br>paymen<br>t details<br>and<br>submit | Payme<br>nt<br>succes<br>sful | Payme<br>nt failed            | Back to cart                       | Fail   |

| PROJECT NAME     | Online agriculture store |
|------------------|--------------------------|
| MODULE NAME      | Cart                     |
| CREATED BY       | Monisha Moudivender      |
| TEST CASE ID     | TG_CART_004              |
| TEST PRIORITY    | Medium                   |
| DATE OF CREATION | 2/2/2023                 |

| DATE OF REVIEW 2/2/2023 |
|-------------------------|
|-------------------------|

| TEST<br>SENEARIO    | TEST<br>CASE                            | PRE-CONDITI<br>ON           | TEST<br>STEP  | EXPECTED<br>RESULT          | ACTUAL<br>RESULT                            | POST-CONDITIO<br>N | STATUS |
|---------------------|---|-----------------------------|---|-----------------------------|---|--------------------|--------|
| Verify cart details | Proceed to<br>add<br>product in<br>cart | Need to select<br>a product | Select<br>product<br>and<br>click<br>add to<br>cart | Product<br>added to<br>cart | Product<br>added to<br>cart                 | Cart shown         | Pass   |
| Verify cart details | Proceed to<br>add<br>product in<br>cart | Need to select<br>a product | Select<br>product<br>and<br>click<br>add to<br>cart | Product<br>added to<br>cart | Product<br>not<br>added<br>showing<br>error | Showing error      | Fail   |

| PROJECT NAME     | Online agriculture store |
|------------------|--------------------------|
| MODULE NAME      | Search                   |
| CREATED BY       | Monisha Moudivender      |
| TEST CASE ID     | TG_SEARCH_005            |
| TEST PRIORITY    | High                     |
| DATE OF CREATION | 2/2/2023                 |
| DATE OF REVIEW   | 2/2/2023                 |

|          |      |             |      | EXPEC | ACTUA |              |        |
|----------|------|-------------|------|-------|-------|--------------|--------|
|          |      |             |      | TED   | L     |              |        |
| TEST     | TEST | PRE-CONDITI | TEST | RESUL | RESUL | POST-CONDITI |        |
| SENEARIO | CASE | ON          | STEP | т     | т     | ON           | STATUS |
| Verify search<br>functionality | Proceed to<br>search<br>product | Need valid user<br>id | Click<br>the<br>search<br>tab | Search<br>tab<br>works<br>and<br>show<br>options | Search<br>tab<br>works<br>and<br>show<br>options | Showing space<br>to type and<br>options of<br>products | Pass |
|--------------------------------|---------------------------------|-----------------------|-------------------------------|--|--|--|------|
| Verify search<br>functionality | Proceed to search product       | Need valid user<br>id | Click<br>the<br>search<br>tab | Search<br>tab<br>works<br>and<br>show<br>options | Tab not<br>working                               | Showing error  | Fail |

| PROJECT NAME     | Online agriculture store |
|------------------|--------------------------|
| MODULE NAME      | Profile update           |
| CREATED BY       | Monisha Moudivender      |
| TEST CASE ID     | TG_PROFILE_UPDATE_006    |
| TEST PRIORITY    | Medium                   |
| DATE OF CREATION | 2/2/2023                 |
| DATE OF REVIEW   | 2/2/2023                 |

| TEST<br>SENEARI<br>O         | TEST<br>CASE                    | PRE-CONDITI<br>ON | TEST<br>STEP                    | EXPEC<br>TED<br>RESUL<br>T | ACTUA<br>L<br>RESUL<br>T | POST-CONDI<br>TION                    | STAT<br>US |
|------------------------------|---------------------------------|-------------------|---------------------------------|----------------------------|--------------------------|---------------------------------------|------------|
| Verify<br>profile<br>updates | Proceed to<br>update<br>profile | Need a profile    | Updatin<br>g<br>phone<br>number | Profile<br>update<br>d     | Profile<br>update<br>d   | Showing<br>updated<br>phone<br>number | Pass       |
| Verify<br>profile<br>updates | Proceed to<br>update<br>profile | Need a profile    | Updatin<br>g<br>phone<br>number | Profile<br>update<br>d     | Error                    | Showing error                         | Fail       |

| PROJECT NAME     | Online agriculture store |
|------------------|--------------------------|
| MODULE NAME      | Review                   |
| CREATED BY       | Monisha Moudivender      |
| TEST CASE ID     | TG_REVIEW_007            |
| TEST PRIORITY    | Medium                   |
| DATE OF CREATION | 2/2/2023                 |
| DATE OF REVIEW   | 2/2/2023                 |

| TEST<br>SENEARI<br>O        | TEST<br>CASE                  | PRE-CONDITI<br>ON  | TEST<br>STEP      | EXPEC<br>TED<br>RESUL<br>T | ACTUA<br>L<br>RESUL<br>T                | POST-C<br>ONDITIO<br>N     | STATUS |
|-----------------------------|-------------------------------|--------------------|-------------------|----------------------------|---|----------------------------|--------|
| Verify<br>review<br>updates | Proceed to<br>write<br>review | Need an account    | Writing<br>review | Review<br>update<br>d      | Review<br>update<br>d                   | Updated<br>review<br>shown | Pass   |
| Verify<br>review<br>updates | Proceed to<br>write<br>review | Need an<br>account | Writing<br>review | Review<br>update<br>d      | Not<br>update<br>d<br>showin<br>g error | Showing                    | Fail   |

| PROJECT NAME     | Online agriculture store |
|------------------|--------------------------|
| MODULE NAME      | Cancel                   |
| CREATED BY       | Monisha Moudivender      |
| TEST CASE ID     | TG_CANCEL_008            |
| TEST PRIORITY    | medium                   |
| DATE OF CREATION | 2/2/2023                 |

|--|

| TEST<br>SENEARI<br>O       | TEST<br>CASE                  | PRE-CONDITI<br>ON | TEST<br>STEP           | EXPECT<br>ED<br>RESULT | ACTUAL<br>RESULT  | POST-CONDITI<br>ON          | STATUS |
|----------------------------|-------------------------------|-------------------|------------------------|------------------------|-------------------|-----------------------------|--------|
| Verify<br>cancel<br>option | Proceed to<br>cancel<br>order | Order placed      | Canceli<br>ng<br>order | Order<br>canceled      | Order<br>canceled | Order canceled successfully | Pass   |
| Verify<br>cancel<br>option | Proceed to<br>cancel<br>order | Order placed      | Canceli<br>ng<br>order | Order<br>canceled      | Showing<br>error  | Show error                  | Fail   |

| PROJECT NAME     | Online agriculture store |
|------------------|--------------------------|
| MODULE NAME      | Otp                      |
| CREATED BY       | Monisha Moudivender      |
| TEST CASE ID     | TG_OTP_009               |
| TEST PRIORITY    | High                     |
| DATE OF CREATION | 2/2/2023                 |
| DATE OF REVIEW   | 2/2/2023                 |

| TEST<br>SENEARI<br>O                 | TEST<br>CASE         | PRE-CONDITI<br>ON                                 | TEST<br>STEP | EXPEC<br>TED<br>RESUL<br>T | ACTUA<br>L<br>RESUL<br>T | POST-CONDIT           | STATUS |
|--------------------------------------|----------------------|---|--------------|----------------------------|--------------------------|-----------------------|--------|
| Verify<br>entering<br>otp<br>process | Proceed to enter otp | Enter credit<br>card details in<br>payment option | Enter<br>otp | Otp<br>entered             | Otp<br>entered           | payment<br>successful | Pass   |

| Verify   |            |                 |       |         |        |                |      |
|----------|------------|-----------------|-------|---------|--------|----------------|------|
| entering |            | Enter credit    |       |         |        |                |      |
| otp      | Proceed to | card details in | Enter | Otp     | Otp    | Showing        |      |
| process  | enter otp  | payment option  | otp   | entered | failed | payment failed | Fail |

| PROJECT NAME     | Online agriculture store |
|------------------|--------------------------|
| MODULE NAME      | Favourite                |
| CREATED BY       | Monisha Moudivender      |
| TEST CASE ID     | TG_FAVOURITE_010         |
| TEST PRIORITY    | Medium                   |
| DATE OF CREATION | 2/2/2023                 |
| DATE OF REVIEW   | 2/2/2023                 |

| TEST<br>SENEARI<br>O                      | TEST<br>CASE                                | PRE-CONDITI<br>ON | TEST<br>STEP   | EXPEC<br>TED<br>RESUL<br>T         | ACTUA<br>L<br>RESUL<br>T                  | POST-CON<br>DITION                  | STATUS |
|---|---|-------------------|--|------------------------------------|---|-------------------------------------|--------|
| Verify<br>product<br>added to<br>favorite | Proceed to<br>add<br>product in<br>favorite | Select a product  | Add the<br>product<br>by<br>clicking<br>on<br>favorite | Product<br>added<br>to<br>favorite | Product<br>added<br>to<br>favorite        | favorite page<br>showing<br>product | Pass   |
| Verify<br>product<br>added to<br>favorite | Proceed to<br>add<br>product in<br>favorite | Select a product  | Add the<br>product<br>by<br>clicking<br>on<br>favorite | Product<br>added<br>to<br>favorite | Product<br>not<br>added<br>to<br>favorite | Product not<br>shown in<br>favorite | Fail   |

After the requirements are thoroughly explained to the entire project team by business analyst, the Database architects have decided to do the database design and also to represent the in-flow and out-flow of data.



Draw database schema and ER diagram



What is a data flow diagram? Draw a data flow diagram to represent the in-flow and out-flow of data when a Farmer is placing an order for the product.

# What is a data flow diagram?

Also known as DFD, Data flow diagrams are used to graphically represent the flow of data in a business information system. DFD describes the processes that are involved in a system to transfer data from the input to the file storage and reports generation.Data flow diagrams visually represent systems and processes that would be hard to describe in just words.By using these diagrams to map out an existing system and make it better or to plan out a new system for implementation. Visualizing each element makes it easy to identify inefficiencies and produce the best possible system. Data flow diagrams can be divided into logical and physical. The logical data flow diagram describes flow of data through a system to perform certain functionality of a

business. The physical data flow diagram describes the implementation of the logical data flow



#### Question 40 – Change Request - 5 Marks

Due to change in the Government Taxation structure. We should change the Tax structure how do you handle change requests in a project?

#### How To Manage A Change Request

Having a process to manage change requests effectively is crucial and can influence the project's success. A transparent management procedure allow to comprehend the repercussions of any changes and to make appropriate decisions. Here are the steps TO follow to manage a request to change:

#### **Collect details**

When you request a change, gathering the maximum information possible is helpful. This can aid the approval team in determining whether to accept the request.

#### **Determine the scope**

Once understand the request's nature, determine whether it falls within the project's scope. At this stage, it is beneficial to consider the change's overall impact on the project. And also find issues within a change request, such as exceeding the budget, missing the deadline or drastically altering the project's original intent.

#### Evaluate the implementation

After determining the request's scope, you can evaluate the implementation strategy and the urgency it requires. It is important to consider the potential benefits and risks of implementing the change. also assess whether the proposed change addresses a genuine requirement or just a desire. Evaluating the request's urgency can help you determine whether it is worthwhile to implement, keeping in mind that extremely urgent requests may be more difficult to execute.

#### **Documentation Of A Change Request**

A properly documented change request can help to manage the process efficiently. Using a change request form makes tracking the request and its progress easy. A detailed record can also lower the likelihood of mistakes. Here are some components that are necessary to include in the documentation of a change request:

#### **Requestor and request number**

Typically, the document requires information regarding who is requesting the change. This indicates whether the request is internal or external. Also add a unique request number. This facilitates the logging and tracking of requests. Including a request name and number can also differentiate between requests within the same project.

#### **Request description**

A thorough explanation of the request is an essential component of the document. This section explains the stakeholder's requested changes. It is important that it contains enough information to prevent any vagueness regarding the nature of the request and to help the team determine which changes are necessary to fulfil the request.

#### **Reason for the change**

It is helpful to mention the reason for the change request. This section can explain the primary issue that may necessitate a change. It may also contain any additional observations that suggest alterations to the project.

#### **Requested changes**

This section describes specific changes the team can make to implement the request. This can include changes to the budget or schedule, for example. It may be necessary to include project specialists in this section because they can evaluate the specific changes required by the project more accurately

#### Change request deadline

If applicable, the document can specify a deadline for the change request. This allows the team to evaluate the request and determine its urgency. The priority of the request may influence the team's decision-making process.

#### **Request approval status**

This section shows the request's processing status at each stage for easy reference. The status of all approvers determines the request's approval status. After the approvers decide, the status reflects either accepted or declined. If accepted, the change request can move to the next phase.

#### **Closure section**

The closure section provides the final determination regarding the change request. If the evaluating team approves a request, it is important to notify the project team as soon as possible so that they can prepare. It is also helpful to update any deliverables or deadlines affected by the change promptly so that the information is easily accessible.

#### Implement the change

After getting approval, you can implement the change. It is ideal to inform the relevant team members promptly and ensure they are aware of new deliverables, deadlines or responsibilities. Once they get the information and implement the change request, make a final assessment

#### Assess the impact

Assessing the request's impact enables the project to advance and improves the process for future work. Consider whether the request may impact the project significantly and how to mitigate this in the future. It is also essential to consider the change's effect on the project's stakeholders and budget.

Have clearly defined guidelines for evaluating the urgency as there may be varying opinions amongst team members.

Question 41 – Change Request Vs an Enhancement - 1 Marks

Is this a change request or an enhancement???

#### What is change request?

Change requests may involve an additional feature, <u>customization</u> or an extension of service, among other things. Because change requests are beyond the <u>scope</u> of an original agreement or contract, this often means that the client will incur costs to pay for the resources required to satisfy the project changes.

#### **Software Enhancements**

Software Enhancements means modifications or improvements made to the Software which improve performance or capacity of the Software or which provide additional functions to the Software.

#### A change control board

A change control board (CCB) is a group of stakeholders from various departments that leads and oversees the change management process for a project. Without a change control board in place, there's a risk that proposed changes may clash with project objectives and constraints.

They play a crucial role in assessing the risks associated with change requests and approving or rejecting them

It is an enhancement. As a BA once I have a clear understanding of the change, I document it appropriately, including the updated requirements, impact analysis, and any associated risks and I will convey this to Change Control Board.

Question 42 – Estimations - 1 Marks

Come up with estimations – How many Man-hours required.

| JOB     | DAYS     | HOURS    |
|---------|----------|----------|
| Plan    | 30 Days  | 270 hrs  |
| Design  | 60 Days  | 540 hrs  |
| Develop | 300 Days | 2700 hrs |
| Test    | 135 Days | 1220 hrs |
| UAT     | 14 Days  | 126 hrs  |

So the estimated man hours required for this project is 4900 hours

Question 43 – UAT – 2 Marks

Project has finally completed all the stages i.e., design, development, testing etc. Now, it is the role of a business analyst to contact the client for testing of the final product and have to successfully complete it. How are you going to handle this situation? And once it is done, what will be the process to close the project?

Explain UAT Acceptance process.

As a BA I will communicate to the client to discuss and schedule for UAT as the project has finally completed. Once it is done, the process to close the project is to get sign-off in Short Description A User Acceptance Testing (UAT) Sign off is a document to record the acknowledgement of the participants that carried out the test cases for a specific project prototype. This document also confirms the development of the requirements that have been initially agreed upon.

- Sign-off and exit criteria
  - Stakeholders evaluate whether the application meets the defined acceptance criteria.
  - If the application passes UAT, stakeholders provide sign-off for production release.
- Documentation
  - Document UAT results, including test cases, defects, resolutions, and any additional feedback.
  - Maintain UAT documentation for reference and auditing purposes.

# **User Acceptance Testing (UAT)**

**User Acceptance Testing (UAT)** is a type of testing performed by the end user or the client to verify/accept the software system before moving the software application to the production environment. UAT is done in the final phase of testing after functional, integration and system testing is done.

## **Purpose of UAT**

The main **Purpose of UAT** is to validate end to end business flow. It does not focus on cosmetic errors, spelling mistakes or system testing. User Acceptance Testing is carried out in a separate testing environment with production-like data setup. It is kind of black box testing where two or more end-users will be involved.

UAT is performed by -

Client

End users

### UAT PROCESS

- Analysis of Business Requirements
- Creation of UAT test plan
- Identify Test Scenarios
- Create UAT Test Cases
- Preparation of Test Data(Production like Data)
- Run the Test cases
- Record the Results
- Confirm business objectives

Before moving into production, following needs to be considered:

- No critical defects open
- Business process works satisfactorily
- UAT Sign off meeting with all stakeholders

#### **Qualities of UAT Testers**

To ensure that the user acceptance testing is executed properly and can generate valuable outputs to develop a market-driven product, you need to build the right UAT

team. Tester should be Analytical and Lateral thinker and combine all sort of data to make the UAT successful.User acceptance testers can be from existing users or onboard individuals from the target audience who are interested in testing the application.

Based on the product type, functionalities, sector, target audience, and other factors, form a suitable UAT team. UAT team members can be business analysts, QA testers with relevant experience, project team members, target audience members, and others as well.

#### UAT SUCCESS

Following points needs to be considered to make UAT Success:

- Prepare UAT plan early in the project life cycle
- Prepare Checklist before the UAT starts
- Conduct Pre-UAT session during System Testing phase itself
- Set the expectation and define the scope of UAT clearly
- Test End to End business flow and avoid system tests
- Test the system or application with real-world scenarios and data
- Think as an Unknown user to the system
- Perform Usability Testing
- Conduct Feedback session and meeting before moving to production
- specific users for its acceptance.

#### **BENEFITS OF UAT**

Better customer experience

Improving customer experience is one of the ultimate goals for any product, and user acceptance testing can help to achieve that. Since this testing is entirely focused on

how well the product can accommodate user requirements, or how satisfied they can be while using the product, it helps bridge the gap between product offerings and customer expectations. As a result, the customer experience gets improved manifold once the final product is launched.

## **Higher ROI**

By opting for user acceptance testing and developing the product accordingly, one can obtain a higher return on investment (ROI) from the product. Since the final product is well-equipped with all the features and performance metrics as targeted, very low maintenance, modification, or upgradation cost would be needed for the product. Besides, user acceptance testing helps launch a highly user-centric product, which results in a higher customer retention rate, lifecycle values, and satisfaction rate.

## Enhanced product usability

As the product is developed by taking into account user perspectives, the usability score of the final product is much higher than the ones developed without user acceptance testing. The better usability of the product helps it sustain the competitive market longer and helps the product leverage its extensive use cases at its best

Question 44 - Project Closure Document - 2 Marks

Explain Project closure document

# What is a project closure report?

A project closure report is the last deliverable submitted at the end of a project, and it measures the project's overall success. The project manager records details of every phase of the project and provides a way for both themselves and senior management to determine what parts of the project worked and what didn't. It also allows the company to analyze how to improve in the future and the best practices for future projects. These reports show evidence of the team's hard work and how they completed their specific objectives. They may also include feedback from stakeholders and team members who worked on the project. Project closure reports are important because they can close contracts, release project resources to the rest of the company, communicate final information to stakeholders and plan the operational transition.

#### What to include in a project closure report

Project closure reports may vary in length or content depending on the size and complexity of the project, but they usually include some of the same basic information. Here is a list of common details featured in project closure reports:

- The original project guidelines, including stakeholder requests, budget and timeline
- Proof that the clients have received their deliverables
- Invoices from suppliers, stakeholders or other sources
- Release or transfer records of remaining resources
- Detailed performance reviews on each phase of the project
- Feedback from senior management, team members and stakeholders
- A separate folder with all project files and communication for archival purposes
- A request for project closure approval